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FRACTURES OF THE NECK OF THE FEMUR

A REVIEW OF 33 CONSECUTIVE CASES*

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Some may think that already this subject has claimed an undue share of attention within the last few years. My excuse for bringing it up again is that the profession, including the surgeon, is still in some doubt as to the results which may reasonably be expected to follow the adoption of any one of the various forms of treatment. Put in another way, it may be stated that the Smith-Petersen nail is on its trial. It is therefore desirable that individual experience of this particular method should be published with details.

In reviewing these cases it must be remembered that the mortality rate in the years following the original accident must necessarily be high owing to the high average age of the patients. Ten years ago Calvert investigated this aspect of the problem in the records of the Royal Victoria Hospital and found a mortality of 20 per cent. in a consecutive series of fifty patients, the most recent of whom had sustained the fracture five years before.

The Hey Groves Method of Inserting the Smith-Petersen Nail

For the last three years I have been using the Smith-Petersen three-flanged nail, introduced in most cases according to the method of Hey Groves and employing the apparatus described by him. My experience of those cases has convinced me that both the nail and this particular method of its introduction have justified the claims set forth by their designers. In my opinion they afford a reliable method of obtaining good functional results in a relatively short space of time and with the minimal amount of discomfort and danger to the patient; moreover, the method is applicable to cases of every age, provided only that they are not already moribund and, in general, that they are seen within a few weeks of the injury.

The method conforms to the two great elementary principles in the treatment of all fractures: (1) the fragments are placed in correct apposition; (2) they are held in this position for a sufficient length of time for bony union to take place. It has, however, the theoretically grave disadvantage that it entails the introduction of a non-absorbable material, which must have some deleterious influence on the growth of new bone.

At present the records of instrument makers show from their enormous sales that the use of the nail is immensely popular. We cannot fail to be reminded of the fact that at one time a similar vogue surrounded Lane's method of treating fractures of long bones by the application of steel plates. And yet this method is now hardly used at all. It may, of course, be that the Smith-Petersen nail is stainless and that therefore it does not to the same extent cause atrophy of the adjacent bone, or that alternative methods of treating fractures of the femoral neck have so many inherent drawbacks. However the problem may be looked at, it is of prime importance to know what results have followed the use of the nail in a series of consecutive cases treated by a single method rather than what may have happened in isolated patients, leaving time to decide the ultimate fate of the method.

Other Methods of Treatment

The alternative methods in use at present are:

1. *The Method of Royal Whitman.*—This must be regarded as the classical method, for it was the first, and for many years the only, really effective attempt to apply these two principles to fracture of the femoral neck. The principle of reduction was met by Whitman by wide abduction and internal rotation. For the satisfaction of the second principle he depended upon fixation in a plaster-of-Paris case extending from the chest to the toes—a matter of some difficulty to most surgeons and beyond the capacity of many patients to bear for the required length of time, having regard to the aged and infirm persons in whom many of these fractures occur, not to mention the fact that it is often followed by a permanently stiff knee-joint. Even in expert hands the Whitman method of treatment fails to secure bony union in many cases—a fact almost universally admitted—whilst in the hands of the average surgeon bony union does not ensue in more than 50 per cent. It is surely a significant fact that in a recent communication the use of the nail has received the benediction of Whitman himself.

2. In theory the soundest method of treating any fracture which tends to remain ununited is by the use of an autogenous bone graft. In Holland the fracture under discussion is a very common accident at all ages owing to the universal use of the bicycle as the national mode of progression. The use of a fibular bone graft has been popularized by Noordenbos, and the results obtained by him and by his followers seem excellent from the functional point of view. The method, however, has the same disadvantage as that of Whitman in requiring fixation in plaster-of-Paris for a considerable length of time.

3. A third method, both novel and ingenious, is that recently suggested by McMurray. The ordinary principles of reduction and its maintenance are despaired of and bony union aimed at in an abnormal position. This is attained by an intertrochanteric osteotomy, the object of which is to transfer

* Presidential Address to the Northern Ireland Branch of the British Medical Association.

the axis of the femoral shaft from its normal alignment to a line passing through the hip-joint. The arguments in its favour are that bony union and painless weight-bearing can be guaranteed and that the operation is a relatively easy one. It possesses, however, the same serious objection as Whitman's method in requiring confinement to bed in plaster-of-Paris for a period of three and a half to four months. I cannot from personal experience criticize this method in the treatment of recent fractures. It comes with the strong backing of the Liverpool School of Orthopaedics, but I doubt if the perfection of function so often attainable by the Smith-Petersen nail can ever be attained by McMurray's operation; and even its author does not suggest that it is ever applicable to patients in the seventh and eighth decades, who in my series constituted one-third of the cases.

General Suitability of the Hey Groves Method

TYPE OF FRACTURE

The three-flanged nail was designed by Smith-Petersen for fracture of the anatomical neck of the femur, hitherto known as the "intracapsular fracture." It finds its chief use in those fractures which are situated in the middle region of the neck—the "mid-collum" fracture of Johansson. It is less suitable for subcapital fractures, and for fractures at the base of the neck it is usually unnecessary. It may be a significant factor that the invention of the nail was synchronous with the introduction and general use of stainless steel for surgical instruments, including plates, nails, screws, etc.

THE ELDERLY

The most severe test of the applicability of any method of treating fractures of the femoral neck is its use in the aged patient. Since the end of 1935 no patient has been refused by me on the score of age alone. One female, aged 82, seen two days after the fracture, was moribund, and died untreated within forty-eight hours. Several patients, in addition to being elderly, had already had the fracture for months, while one who was refused had had it for a year. In all these considerable absorption of the neck had taken place so as to merit the title "pseudarthrosis." Of the thirty-three patients operated on the oldest was 83 and the youngest 43; the average age was 64½; one patient was between 40 and 50; nine between 50 and 60; thirteen between 60 and 70; six between 70 and 80; four over 80.

FRACTURES NOT RECENT

It has been hard to decide when treatment had already been too long delayed for union to occur even after successful insertion of the nail. The features which make healing unlikely, or even impossible, are:

1. *Absorption of the Neck.*—This arises from movement of the limb with the fracture ununited, and in its extreme form a pseudarthrosis already exists. In such cases there are at least three pathological changes present: (*a*) the muscles and ligaments around the joint are shortened so that reduction may not be possible; (*b*) even when reduction can be effected the fragments do not "fit" together owing to disappearance of part of the bony tissue of the neck; (*c*) the fractured surfaces are sclerotic and burnished so that growth of new bone across the gap is prevented.

2. *Sclerosis of the Whole Head.*—This has been described, but has not been met with in this series. A partial and patchy sclerosis, most marked beneath the articular cartilage, has been the apparent cause of a degenerative arthritis in two cases with sound bony union after nailing.

One case, already broken for fourteen months—in which the patient had spent the whole intervening period in bed—has given bony union with, however, only moderate function. In this case both the head and the upper part of the neck and great trochanter were greatly decalcified. This was looked upon as a hopeful sign from the point of view of union, indicative as it was of good blood supply in both fragments. In long-standing cases of six weeks or more there is a tendency, even when union occurs, for failure of the nail to hold the fragments in the optimum position. Such cases may show gradual displacement of the great trochanter upwards for a quarter to half an inch above the corresponding part of the head. Later on this interferes with abduction, and, though good support and freedom from pain may be obtained, there will be some limitation in normal movements. Or the displacement of the distal fragment may be inwards, accompanied by shortening of the neck and the presence of some degree of coxa vara. In such cases the head of the nail creeps outwards and may ultimately lie as much as half an inch outside the contour of the shaft. This has been found in late *x*-ray films of patients showing strong bony union and excellent functional results. Under the heading of suitability a note of warning should be sounded. The only death in the series directly attributable to the operation was due to coronary embolism. This patient fell as the result of an anginal attack, sustained a fracture of her hip, and four days after operation a coronary embolus caused her death. This sequence of events was confirmed at the post-mortem examination, and might possibly have been prevented by a period of complete rest in bed before operation.

INSERTION OF THE NAIL

Since the publication of the method of Hey Groves with his apparatus I have been using his original design, and have come to the conclusion that the operative failures have not been due to the method but to some mistake in technique, to allowing the patient to use the limb too freely before bony union had become sufficiently established, or to operating on patients in whom the femoral neck had already been absorbed. Recently Hey Groves has suggested that the operation can be performed in bed without any disturbance of the patient, without pain or shock, and in a very few minutes. The operative procedure he originally described need not be accompanied by shock. I am therefore forced to conclude that the time factor is of no great importance, while there are obvious objections to performing this or any operation in bed, especially if one eye is to be kept on the clock. None of my patients has been obviously shocked by the operation; many of them have slept throughout the whole operative procedure; and some, a few hours afterwards, have been unaware that anything had been done.

Abstract of the Method

Probably by this date most operators using the Smith-Petersen nail have already developed their own technique. This will be determined by the limitations of the surgeon, the place of operation, and, to some extent, by the condition and age of the patient. In my opinion a portable *x*-ray apparatus is essential, an orthopaedic table desirable, and expert assistance valuable. A spinal anaesthetic has been used in all the cases and has proved satisfactory.

WHEN TO OPERATE

My patients have been operated on as soon as convenient after their admission to hospital. Some of them had already undergone other forms of treatment, but most had had no treatment at all. In twenty-four cases the interval between date of fracture and date of operation was stated in the notes. The shortest interval was four

days and the longest sixteen months, the average in the cases treated being just over nine weeks. Nearly all the failures were included in the long-delayed operations, as might be expected. In the absence of early complications I regard a week after receipt of the injury as the ideal time for operation. I am not quite so sanguine as Brittain, who holds that *all* the grave complications and sequelae which follow fracture of the femoral neck in the aged may be prevented by the early introduction of the nail.

THE ANAESTHETIC

The patient is given a quarter of a grain of morphine half an hour before the time fixed for the operation. To avoid the pain and shock of moving him before inducing anaesthesia, the bed is wheeled to the theatre. The patient is gently turned upon his sound side, his back brought to the edge of the bed and arched by strongly flexing the sound limb. A local anaesthetic is injected between the third and fourth lumbar spinous processes, and this is followed by an intraspinal injection of 2.5 c.cm. of decicaine. Immediately after the injection the foot of the bed is elevated to an angle of 15 degrees with the horizontal and kept in this position for fifteen minutes. Then for five minutes the patient is turned flat on his face, the feet still being kept raised. In every case there has by this time been good anaesthesia, which has lasted throughout the operation, and there has been no subsequent complaint of headache. The patient is then rolled on to the Hawley table on his back, and the sound foot bandaged in internal rotation to the footpiece with the limb in moderate traction.

REDUCTION OF THE DISPLACEMENT

In all the recent cases I have used the Leadbetter method, modified only by the application of outward traction to the upper end of the femoral shaft during flexion and internal rotation. After reduction the foot on the injured side is bandaged to the footpiece in strong internal rotation, traction, and moderate abduction. The limbs are thus symmetrically placed, and it will be found that the great trochanters are equidistant from the table and the ilio-tibial bands of equal tension on the two sides. I have found measurements of no value at this stage.

POSITION OF THE FEMORAL NECK

The various anatomical landmarks in the neighbourhood of the hip-joint are now identified: the anterior superior spine, the pubic spine, Poupart's ligament, the line of the femoral artery (we have found this variable in our cases), and the line of the femoral shaft. Having determined these by palpation, the situation of the femoral head and line of neck can be inferred. The Hey Groves angle-piece is strapped by adhesive plaster on the front of the joint as directed by its author. A guide wire is placed over the assumed position of the femoral neck and under the angle-piece. It, too, is fixed by adhesive plaster. The first *x*-ray film is now taken and rapidly developed. The film will show whether reduction has been complete and, by comparing it with the angle-piece and guide still fixed to the front of the hip, we are able to determine accurately: (1) the centre of the head; (2) the point where the axes of the neck and shaft intersect. The accurate determination of these two points is the crux of the whole operation. It is made difficult in fat patients by a pendulous abdominal wall overlying Poupart's ligament, and by the fact that in some cases the femoral artery overlies the centre of the femoral head. When the points have been finally decided upon they are marked on the skin by crosses, using a sharp needle for the purpose, and the angle-piece, guide wire, and strapping are removed. All these steps have been of a preliminary nature. Now the surgeon, his assistants, and the parts are prepared for the operative procedures.

The Hey Groves Guide

The spikes of the Hey Groves apparatus, adjusted to the required interval, are introduced through punctures made in the position of the crosses and pushed down firmly upon the underlying bone. This brings the carrier of the guide against the skin on the outer side of the thigh and indicates the position of the incision, which is deepened down to the outer surface of the femur. The carrier is pushed into the wound until it meets with the bone, and through the carrier passes the guide wire. This is of the rigid type suggested by Watson-Jones—a matter of some importance, for it allows the point to be driven into the bone by a few strokes of the hammer before the drill is attached. This manœuvre prevents the point from slipping upwards along the shaft of the femur. The drill is now attached to the guide and the bone drilled. This guide is six inches long and passes inwards until at least half of it is buried. This ensures that it has engaged the head of the bone. The second *x*-ray film—an antero-posterior one—is now taken. With increasing confidence in the Hey Groves apparatus we have abandoned the former practice of taking a lateral film at this stage. This film shows whether the guide occupies the centre of the neck, the length of nail required, and the relative position of the flanges if the position is not quite central.

The length of nail will be determined by the position of the point of the guide in relation to the head of the bone and the length of the guide buried, keeping in mind the amount of distraction of the fragments. We have found that nails of three and a quarter and three and a half inches are most often used. An absolutely central nail may be slightly longer than one that is eccentric, and will therefore be more effective in maintaining fixation. It must also be decided at this stage whether the position is good enough or whether a second guide must be introduced. This is usually a simple matter with the first still in position.

Trusting to the analogy that valgus positions of the head often resulted in sound union and good function without treatment, the view was at first held that low insertion of the nail leading to upward tilting of the head was beneficial rather than otherwise. This, however, cannot be maintained owing to the tendency for such cases to develop arthritis.

It now only remains for the nail to be threaded on the guide and driven into the bone. As soon as it has penetrated far enough to engage the head, and not before, the guide wire is withdrawn. The nail is then hammered inwards until its head comes in contact with the shaft of the femur. Traction on the foot must now be released. This has generally resulted in the nail head slipping outwards about a quarter of an inch owing to the distraction of the fragments being taken up. The punch is again applied to the head and the nail is finally driven in until its head again comes in contact with the shaft. A few more strokes will carry the upper end of the shaft and nail together against the proximal fragment, producing the required amount of impaction.

If the operation has been successful in obtaining secure attachment of the head of the femur to the neck, this can be demonstrated by putting the joint through its normal movements with the fingers of one hand on the great trochanter. Further confirmation of the immediate result

must be obtained without possibility of mistake by *x*-ray films in the antero-posterior and lateral directions before the patient leaves the table.

After-treatment

The day after operation the patient is conscious of freedom from deep pain in the hip and soon obtains good control of the limb. He is kept in bed, but is allowed to sit up on a bed-rest. No retentive apparatus, apart from a pillow under the knee and a sandbag on the outer side of the foot, is necessary. Massage for the muscles of both limbs is used from the day after operation; movement is encouraged in all joints of both limbs—an important point, especially in elderly patients. Subsequent progress will depend on the age of the patient and on the interval between the dates of the fracture and the operation. Generally the patient is confined to bed for from six to eight weeks. Afterwards he sits out of bed on a chair and learns the use of crutches, often a difficult undertaking in an elderly stout person. In the younger patients restoration of function is rapid: progress will be accompanied by the development of callus, as shown by *x*-ray films. A lookout should be kept for new bone bridging the gap of the fracture and more especially along the under aspect of the neck in the situation of the calcar, as pointed out by Gissane. Older patients may progress slowly, three to six months elapsing before they can take the full weight of the body on the limb without pain and being able to discard the aid of crutch or stick.

General Results

It is possible by means of the technique described above to obtain immediate firm fixation of the broken fragments in good position with complete relief of symptoms. Let us try to find out what is the ultimate fate of such cases.

The present relatively small series of thirty-three unselected and consecutive cases covers a period of just over three years. It includes all the patients in whom I have used, or tried to use, the Smith-Petersen nail by a closed type of operation. In the three earliest cases the nails were introduced blindly with the assistance only of one pre-operative antero-posterior *x*-ray picture. In the next four cases a fine Kirschner wire was used as the guide, and in one of these, owing to the buckling of the wire at the seat of the fracture, the nail had to be extracted on the table, and it was found impossible to remove the wire at all. In twenty-six cases the Watson-Jones guide and the Hey Groves apparatus have been used, to our entire satisfaction. No wound or deep sepsis occurred in any of the cases.

There have been thirty-seven operations performed on the thirty-three patients. One patient had a second operation for reinsertion of the nail, and remains a failure; one patient who had a second operation for reinsertion and a third for its removal has obtained bony union; one whose nail came out had it replaced by an autogenous bone graft at a second operation, and the bones have remained ununited. A review of results in these cases has been greatly assisted, indeed made possible, by the kind help of my colleague, Mr. R. J. McConnell, who has produced a film of the results in twenty-two patients out of twenty-four who obtained bony union. Of the other two patients who obtained bony union, one, a man, died from pneumonia after enjoying good use of his limb for a year; the other, a woman, developed mental symptoms and, though getting about in her own house without pain and under supervision, could not be persuaded to submit to the photographer's art!

By means of the film it has been possible to judge of the functional results after seeing the patients use their lower limbs in sitting, standing, walking, running, going up and down stairs, etc. On analysing the results we find that of the thirty-three cases operated on one patient died, in seven for various reasons the fragments had not united, one was too recent to form an opinion, and in twenty-four bony union took place. Of the twenty-four patients with bony union twenty-two have been "filmed." Excluding the patient who died four days after operation, the patient in whom the nail was never inserted, and the one too recent, there are twenty-four bony unions out of thirty patients who had the nail inserted and who lived long enough for bony union to occur—80 per cent.

Answers will here be sought to the following questions: (1) What is the mortality rate of the operation, immediate and remote? (2) How many patients as the result of treatment obtained bony union? (3) What is the resulting function in those cases showing bony union? (4) How many patients suffer from pain? May this be taken as a sign of incipient arthritis of the degenerative type?

The Mortality Rate

A review made three years after the first operation showed that already four patients out of thirty-three are dead. The following are the details:

(*a*) A woman aged 52 years died on the fourth day as the result of coronary embolism—the only death directly due to operation; the patient was the youngest but one of the series.

(*b*) A man aged 66 died of pneumonia one year after operation (January 14, 1936). He had firm bony union and good painless function, and the result was often demonstrated to students at hospital during the year following operation.

(*c*) A woman aged 70 died of diabetes (operation on March 23, 1937) twelve months after operation (ununited)—"a troublesome old lady." Seven days after operation, and many times on subsequent days, she got out of bed without apparent harm to the position of the nail: in the end the nail was extruded and displacement of the fragments recurred.

(*d*) A woman aged 83 (operation on August 31, 1937) died nine months after operation at the infirmary. The cause of death was unknown.

Proportion of Cases Resulting in Bony Union

The second question is probably the most important one, the general answer to which will decide the fate of the method of treatment which has been adopted. The evidence upon which the presence of bony union can be vouched for is threefold: (*a*) Clinical examination of the hip-joint should show painless normal movements—that is, rotation of the limb around the axis of the head, the absence of telescoping at the hip, and the absence of crepitus in carrying out these movements. (*b*) *X*-ray appearance of new bone bridging across the gap of the fracture and the development of lines of stress, especially in the position of the calcar femorale. (*c*) Good function in the shape of painless weight-bearing and the absence of limp when the patient walks.

Applying these tests, we find them satisfied in twenty-four out of the thirty-three patients. Excluding one patient too recently operated on, success was therefore obtained in twenty-four out of thirty-two operations. If one patient be excluded owing to death on the fourth day and another as not having the nail introduced at all, we find that insertion of the nail has resulted in twenty-four obtaining bony union out of thirty—that is, 80 per cent.

Let us consider further the seven patients who for various reasons have failed to obtain bony union. Five

of these were among the earlier cases before the operative technique had been perfected. What are the causes of failure?

1. Failure (operation August 7, 1936) in a man aged 71 was due to complete breakdown of operative technique. A Kirschner wire was used as a guide. It buckled at the site of fracture when the nail was being introduced, forming an S-shaped bend at this level. This was discovered by noting that the guide was being carried in by the nail and was then demonstrated by an *x*-ray film. With great difficulty the nail was withdrawn, but the Kirschner wire could not be withdrawn at all. Non-union is therefore not attributable to the nail but to failure in the method of introduction.

2. Failure in a woman aged 69 (operation August 12, 1936) was due to too early use in a subcapital fracture. The patient was sent to a convalescent home six weeks after an apparently good introduction of the nail. She returned a month later with the nail broken out through the upper part of the head. It seemed unlikely, owing to the small size of the head and owing to comminution, that further nailing would succeed, and therefore a bone graft was inserted, but this subsequently broke and the fracture remains ununited. Causes of failure were: (1) small upper fracture, and (2) too early movements of limb without proper supervision.

3. The third failure occurred in a woman aged 70, a diabetic (operation on March 23, 1937). The patient could not be prevented from getting out of bed. She did this on several occasions without apparently displacing the fragments. Eventually, however, some three months after operation, there was separation of fragments, and she died one year after incurring the fracture.

4. This failure occurred in a very frail old woman aged 83 (operation on August 31, 1937). She showed no evidence of new bone formation, and died in the infirmary nine months after operation.

5. Failure in a woman aged 80 (operation on December 21, 1937), a very fit old countrywoman, with a fracture in the middle of the femoral neck of eleven weeks' duration. The nail was in a good position. She was kept in hospital for three months, but was out of bed for several weeks before leaving. *X*-ray films showed no sign of bony union, but there were progressively developing lines of sclerosis on each side of the fracture. She was found out of bed by her relatives and in pain. The fracture had recurred, and the nail was replaced on March 21, 1938. The result was a real failure of the method in a case late in the series in which union was confidently expected.

6. Failure in a woman aged 60 (operation on January 25, 1938): fracture eighteen months old. There was pseudarthrosis, with absorption of neck. A poor position was obtained at the operation. The fragments could not be approximated so as to fit together. There was a possibility of soft tissue between. No union had occurred after six months.

7. Failure in a woman aged 51 (operation on April 6, 1937): a six-weeks fracture with poor approximation of fragments. She was a difficult patient who refused to be controlled: the nail gradually slipped out, and ultimately broke loose from the proximal fragment.

Summarizing the failures, it may be stated that in one patient the nail was never introduced at all; one was a diabetic who showed no new bone formation; one was an almost bedridden old woman of 83 years; in one the fracture was eighteen months old and there was a pseudarthrosis; one, aged 80, showed sclerosis on both sides of the fracture, though in good position; and one had poor approximation of the fragments with the possibility of soft tissue between.

Resulting Function in Cases with Bony Union

Of the twenty-four patients in whom bony union was obtained twenty-two were induced to present themselves for the purpose of being filmed. These were put through a series of tests, including walking up and down half a dozen stone steps, putting the feet up alternately on an ordinary chair, sitting on a chair and standing up several times, lifting objects off the floor, etc. Before their visit some of the patients had never done anything beyond walking on level ground, and they were obviously suffering from an attack of "nerves" as they faced the camera. The performance of those who had had prolonged treatment by massage was much better than that of those who on leaving hospital were thrown on their own or their friends' resources. The younger patients, other things being equal, were superior in performance to the older ones, and their functional recovery was surprisingly rapid. The youngest patient in the series was a man aged 43. He left hospital five weeks after operation, with crutches, but admitted that he never used them. He began work as a builder's labourer five months after operation, and had carried a hod of bricks up a ladder. For the camera he sat on his heels, touched his toes with his knees straight, ran upstairs, and performed every kind of movement without halt or impediment. An old lady aged 82 has no limp in walking or running, can bend down to her toes, and can tie either shoe: even when she runs it is impossible to tell which hip was broken.

Only one of the twenty-four patients complained of pain: she was aged 61 at the time of the operation, had the femoral head tilted into the valgus position by the nail, and is getting arthritis. The head shows sclerosis under the articular cartilage. In seventeen patients the tests were so well carried out that the function was considered good. By that is meant: (1) they had no pain; (2) it was almost impossible to tell which hip had been broken unless they hurried; (3) they had been carrying out their ordinary occupations—mostly housework in women: of the men one was a solicitor and another a labourer (who has also a fracture of the os calcis on the same side). This patient was in the Royal Victoria Hospital during the B.M.A. meeting of 1937, and was seen by several surgeons.

In three cases the function was classed moderate. These had an easily recognizable limp, though they did not complain of pain. One of them was a timber merchant, who supervised loading in a timber yard from four months after operation. He had a valgus position of the head, some sclerosis, and commencing arthritis. One was a patient who had the nail replaced after it broke out. On the second occasion the nail was intentionally driven into the acetabulum. She now (eighteen months after the second operation, the nail being removed) has bony union, painless weight-bearing, shortening of the neck, and will probably eventually develop arthritis. The third patient was operated on fourteen months after the fracture, and then had well-marked decalcification of the head and the great trochanter. She now (two years after operation) has bony union with a shortened neck and some coxa vara, and the whole upper extremity of the bone is still poorly calcified.

Two others have poor function, though the bony union is sound. They have an obvious limp and insist on using a stick. One has a valgus position of the head with partial sclerosis and evidence of commencing arthritis. The other is a woman weighing sixteen stone; the fracture occurred fifteen weeks before operation. There was a good deal of absorption of the neck, but she now has bony union. Since leaving hospital over a year ago this patient has taken practically no exercise, sitting on a chair all day. She came up using two sticks, but can walk quite well without any such assistance; on level ground she can walk slowly without a noticeable limp.

THE QUESTION OF PAIN

Only one of the twenty-four patients showing bony union complains of pain. She has a valgus position of the head, a certain amount of sclerosis of the head, and is developing a degenerative arthritis. She was operated on twenty months ago, and her gait is deteriorating as her pain is increasing.

Arthritis.—Radiologically three patients appear to be developing arthritis—the one already mentioned, who is a woman, and two others, who are men. One of these men, aged 55, walks slowly without limp and says he has no pain; his operation was performed in a country hospital "on the blind," with the assistance of one antero-posterior photograph and no apparatus or special table. His nail was removed twenty-four months after operation, and six months later he climbed a hill of 500 feet without trouble or subsequent pain. His range of movement is still good. The other is aged 57. He was operated on two years ago; is getting restriction in his movements, especially abduction; has a valgus position of the head; and had the nail removed a month ago lest his arthritis might be due to its presence.

Conclusions

1. The Smith-Petersen nail introduced by the method of Hey Groves is suitable for the treatment of the great majority of cases of fracture of the neck of the femur admitted to a general hospital.

2. Of all the patients operated on, bony union may be expected in over 70 per cent. Of those in whom a nail has been successfully introduced, and who live long enough, bony union may be expected in 80 per cent.

3. Of the patients obtaining bony union almost all will have painless weight-bearing, while 50 per cent. will have almost perfect function.

4. A few will have poor function, due to arthritis, absorption of neck, coxa vara, and defective calcification of the fragments.

Summary

The paper deals with thirty-three patients suffering from fracture of the neck of the femur. In these, thirty-seven operations have been performed for introduction of the Smith-Petersen three-flanged nail by a closed method.

It discusses the suitability of patients for this form of treatment, the method of operation employed, and immediate and remote results obtained on review after three years.

It gives the mortality, immediate and remote, and the number of patients in whom bony union was obtained, with details of the failures.

Immediately after the insertion of the nail the patient obtains complete relief from pain, good control of the limb, and, beyond confinement to bed, suffers from no disability.

The final functional results were demonstrated by a film showing twenty-two of the patients.

At the annual meeting of the British Association for the Advancement of Science, to be held this year in Dundee from August 30 to September 6, under the presidency of Sir Albert Seward, F.R.S., the Section of Chemistry will be presided over by Professor E. K. Rideal, F.R.S., the Section of Anthropology by Professor W. E. Le Gros Clark, F.R.S., F.R.C.S., the Section of Physiology by Professor David Burns, and the Section of Psychology by Mr. R. J. Bartlett.

TUBERCULOSIS—DOGMAS AND DOUBTS OF SIXTY YEARS

BY

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During the course of my training and my period of thirty-seven years as medical officer of health accepted views have varied, and some of the explanations given from time to time have not appeared to accord with experience, raising doubts in my mind as to their correctness. With a view to resolving these doubts I kept records in the hope that opportunity would arise for summarizing the results. This has been done in the following notes from various books and papers and over 200 references.

In Wynter Blyth's *Dictionary of Hygiene and Public Health* (1876), published thirteen years before I registered as a medical student, occurs the following description: "Although there are differences between phthisis, consumption, and tuberculosis, they are only such as have been pointed out of late years by a more accurate and extended pathology; hence it will be convenient for the study of consumption statistics to define, for the purposes of this article, the term 'phthisis' as a disease of the lungs attended by wasting . . . and signified by others as consumption, dry-rot, etc." It was suggested that in certain instances phthisis would appear to be contagious, especially in crowded barracks and such-like places. It was considered that hereditary influence had been much exaggerated, and it is said: "that impure air alone will produce consumption, the excessive mortality of soldiers in certain barracks . . . sufficiently proves." Damp soil, unhealthy trades, tight clothing, etc., are also given among the causes.

Already bacteriology had been born and the microbic causes of a few diseases were known. Within six years of the publication of the above note Koch reported his discovery of the tubercle bacillus. Even so, the new idea was not readily accepted in all quarters, and indeed it was described by some as "simple nonsense—utter humbug" (Philip, 1932). As late as 1893, in the textbook on which I was educated—Frederick Taylor's *Practice of Medicine*—the cautious description reads: "Recent researches on the bacillus of tuberculosis tend strongly to the view of the unity of phthisis—that is, to the belief that all forms of destruction of the lung commonly known as phthisis are due to the invasion of this bacillus, and are tubercular in nature." Later it is said: "Nothing seems to be better established than the truth of the hereditary transmission of phthisis." A common phrase in use about this time was "tubercular diathesis," to which greater importance appeared to be attached than to infection with an organism. As regards lupus, Taylor says: "Nevertheless, there is an increasing tendency to regard the tubercle bacillus as the cause of lupus."

At that time there seems to have been no suggestion of more than one kind of tubercle bacillus: in the *Manual of Bacteriology* (Muir and Ritchie, 1897) the following phrase appears: "There can be no doubt that the bacilli present in tuberculosis of the various mammals mentioned are of the same variety, though differences in virulence may be occasionally noticed. There has, however, of late years been considerable discussion as regards the identity of the bacilli in avian and mammalian tuberculosis."

Dr. B. Arthur Whitelegge (1899) says: "There is still much doubt as to the frequency of direct infection from person to person but none as to its occasional occurrence or as to the fact that almost all persons must frequently inhale and swallow living *Bacilli tuberculosis*."

Dr. Theodore Shennan (1908) observes: "In the causation of the disease one must bear in mind two factors, the soil and the germ. In the absorbing discussions which

are taking place concerning the tubercle bacillus and its modes of entrance into the body we are apt to give insufficient weight to the personal factor. It is now generally concluded that the bacillus is only capable of taking root in individuals whose nutrition and power of resistance are greatly lowered. In fact, tuberculosis may be looked on as the sequel of another debilitating condition due to accident or disease." He describes the characteristics of human, bovine, and avian bacilli, but at that time the great significance of the bovine variety does not appear to have been known generally.

These quotations give an idea of the phases through which tuberculosis had passed in general acceptance in the thirty-two years up to 1908. In that year were published two of the most valuable special works on the subject: Sir Arthur Newsholme's *Prevention of Tuberculosis* and Dr. H. Timbrell Bulstrode's Supplement to the 35th Annual Report of the Local Government Board. Both authors give a detailed historical review of researches with regard to tuberculosis, using many of the same references, but with much the same facts before them come to diverse conclusions. Sir Arthur Newsholme favoured personal infection as being the chief factor in maintaining the disease, while Dr. Bulstrode concluded that possibly bovine infection, especially from milk, was an important element.

Meanwhile, in 1901 Professor Koch gave his famous address at the meeting of the British Congress on Tuberculosis in London and startled the medical world by his expressed belief that tuberculosis in cattle did not infect man. This led to the immediate appointment of the Royal Commission on Human and Animal Tuberculosis, and to its intensive work on the subject covering ten years. As a general result our knowledge of many aspects of tuberculosis was placed on a firmer foundation than would otherwise have been the case, and since that time the researches of the original and other workers have added further to the store of sure facts with regard to tuberculosis.

I have given this cursory review of the changing outlook on tuberculosis in my lifetime to indicate the manner in which one has had to adjust one's views in the light of developments and, even more important, the fact that it is impossible to say even now that the problem of tuberculosis has been wholly solved. In the following paragraphs I deal with various branches of the subject and finally give conclusions to which they lead.

Dimensions of the Problem

Large as was the known share of tuberculosis in the death rates of various countries, the extent to which members of the community were infected was little realized until the present century. The first of my notes on this aspect gives the figures for necropsies collected by Dr. F. Langmead (1913), showing that lesions in all children ranged from 35 per cent. in London to 42.5 per cent. in Christiania: in Vienna the proportion increased from 4 per cent. in children under 3 months to 70 per cent. between 11 and 14 years. Subsequently there are numerous references to much the same effect. These conclusions were confirmed in the living subject with the development of tuberculin tests: as an example may be mentioned Heimbeck's investigation in 1931, quoted by Dr. W. H. Wynn (1932), showing infection increasing from 10 per cent. among children under 3 years to 100 per cent. among persons aged 40 to 50 years. In 1929 Dr. Wynn records an inquiry by M. A. Asserson into the after-history of 460 infants giving positive von Pirquet tests: 112 suffered from advanced tuberculosis (96 per cent. died), thirty-two developed bone, joint, or gland disease, while 316 gave no clinical evidence of disease though skiagrams suggested enlargement of tracheo-bronchial glands in sixty-one cases.

Information as to the numbers of persons with clinical evidence of tuberculosis in the country as a whole is not available so far as I am aware; but in Gloucestershire, with a population of about 330,000, a live register is kept of persons who have been notified at any time as having had illness attributable to tuberculosis. From 1915 the numbers of cases of pulmonary tuberculosis increased from 1,242, at first rapidly and from 1922 more slowly, to 2,457 in 1935; for non-pulmonary trouble the increase has been from 307 to 1,463, and the figure is still rising. The number of pulmonary cases is now fairly constant at about 2,500, or one case for every 132 persons in the population: the maximum number of non-pulmonary cases has not yet been reached, but at present it is about one case for every 240 persons. From these numbers it would appear that though, from the evidence of post-mortem examinations and tuberculin testing, practically all persons have been infected with tuberculosis, the numbers having illness attributed to this cause are small. The development of illness is rather of the nature of an accident owing to the resistance of the individual being reduced from some cause—concurrent trouble, lack of food, debilitating climatic conditions (W. Gordon, *Rainy Winds and Phthisis*, 1910), etc., recognized generally as contributory factors. This accident risk is small, being only about 0.75 per cent. for pulmonary tuberculosis and half that figure for non-pulmonary tuberculosis.

In one-third of the pulmonary cases illness develops rapidly to a fatal conclusion and the death rate in the year of notification is about 30 per cent.; thereafter it falls rapidly to about that of the general population in the sixth year. Under the Regulations of the Ministry of Health some 1,000 cases that have progressed so well as to have had no trouble for five years have been removed from the register as no longer suffering from active tuberculosis.

Source of Infection

To account completely for the fact of practically universal infection it is necessary to find almost universal opportunities for exposure to infection. Numerous *ad hoc* investigations to this end have been made, mainly in connexion with hospitals and by a few tuberculosis officers.

Thus R. C. Wingfield (1931), the medical superintendent of Brompton Sanatorium, made an inquiry into the fate of children in homes of patients where there was a contact case of tuberculosis and in others where the patient had not tuberculosis; he reports the infection of children as follows:

Age	Contact	Non-contact
0–5	67%	17%
5–10	77%	31%
10–15	82%	52%

As a contrast to the column of the table dealing with contacts he mentions that there was a complete absence of clinical tuberculosis among 133 children born at the Papworth Village Settlement.

About the same time the tuberculosis officer for Leeds (Tattersall, 1931) made an investigation as to children aged 0–1 year in respect of the years 1925–9: he grouped the children according to whether there was a sputum-positive or a sputum-negative case in the home. According to his results the numbers of children dying of tuberculosis in sputum-positive houses was over six times that in sputum-negative houses, while the death rate from other causes than tuberculosis in the former approached double that in the latter. The tuberculosis officer in Lancashire made a somewhat similar inquiry in his county with respect to children under 5 years of age, and found the death rate nine times greater in age group 0–1 year, fourteen times in age group 1–2 years, and nineteen times in age group 2–5 years in tuberculous than in non-tuberculous households. The tuberculosis officer for Sheffield (Turner, 1931) criticized the Lancashire results, which showed, curiously enough, a death rate from all causes not very different from the normal, indicating a class differentiation between the controls and the dispensary population.

This aspect of the question has been approached also in respect of married persons, in view of the fact that if infection occurs from association with an infected person the opportunities are greatest among them. Thus, Sofie Tillisch (1921) investigated 1,152 married patients among 3,151 between 1911 and 1920. Of the 1,152, eighty-five had consorts with tuberculosis: thirteen had a history of exposure in childhood, but in the remaining seventy-two cases it is said there was a possibility of conjugal infection. She thought it was unwise to ignore the possibility.

Karl Pearson (1912) concluded that "exposure to infection in married couples was of little importance, while immunity or diathesis was a chief determinant." Dr. Rowland (1924), tuberculosis officer for Northampton, later made an examination of many reports giving figures ranging from 1.5 to 58 per cent., and said his own experience showed a rate of 2.7 per cent.; he concluded (Rowland, 1926) that "conjugal tuberculosis is rare and death rate of partners differs little from that of the general population." In 1922 Dr. Paul Roussel summed up an inquiry among families in Nancy by saying, "Conjugal infection is uncommon even in the poorer classes." Others —for example, Barnes (1924) in America and two observers in Christiania—concluded that there was some risk. In 1933 the Assemblée Française de Médecine Générale referred to variations in findings and passed unanimously a resolution which, while not dismissing conjugal tuberculosis as a figment of the imagination, emphasized the much greater danger of infection in childhood.

From such evidence it would appear that there is little to support a suggestion that adult pulmonary tuberculosis is due to familial infection. The evidence with respect to children is perhaps a little stronger; even so, half of the children at 10 to 15 years in non-contact houses were reported to be infected and above 80 per cent. in contact houses. Why so large a proportion in non-contact houses are found infected and 20 per cent. in contact houses should escape infection is not explained. Further, if comparatively close familial contact is not sufficient to cause infection, is casual association with cases likely to infect 50 per cent. of children not in infected houses? And what proportion of the 50 per cent. have been in contact with any cases of pulmonary tuberculosis? A factor which appears to have been overlooked in connexion with many of these inquiries is that a considerable proportion of the children have been infected by tuberculous milk.

My first reference to the familial aspect appears in the Lady Priestley Memorial Lecture delivered by Professor Elie Metchnikoff on November 29, 1912. He described how, at the age of 23, he married a young lady of the same age who was so ill with pulmonary tuberculosis that she had to be carried in a chair up the steps to the church. He was in close intimacy with her until her death four years later: that he did not develop the disease himself he attributed to the fact that he had ophthalmic scrofula and ganglia in the neck, presumably of tuberculous origin.

Infective Material and Mode of Entrance

After the announcement of Koch's discovery of the tubercle bacillus the manner in which it could be conveyed excited attention, and this aspect of the question receives very full consideration in Bulstrode's report and Newsholme's book. The presence of the bacilli in sputum and discharges, and the fact that much of the trouble was pulmonary, naturally led to the assumption that in some manner material containing the bacillus, given off by infected persons, was inhaled. Investigation followed; dust of rooms occupied by patients was examined, culture plates were exposed in rooms, and experiments were made. It is not necessary to recount these in detail, but it may be said briefly that animals were infected by pumping material into their cages, that culture plates were infected by droplets from the coughing of consumptives and from the mouth of a person washed out with broth containing *B. prodigiosus*, and that tubercle bacilli in droplets were found to survive for many days in the dark, though only a day or two in sunlight. The evidence of infection by inhalation was considered generally as conclusive, but some of the experiments raised doubts. For example, the tests on animals were considered severe, and the conclusions obtained by some were not confirmed by other workers.

That inhalation was an important factor seemed to be supported by experiments in which animals inhaled coloured dusts and by the occurrence of anthracosis in man. But Newsholme very fairly refers to experiments on feeding animals with coloured dusts: "At the autopsy on these animals pigment [was found] in the lungs only, the abdominal organs and mesenteric glands being free." Earlier he refers particularly to the "complexity and shape of the respiratory passages" and the distances along them which the bacilli would have to pass before they could reach "the first lesion in pulmonary tuberculosis . . . at the angles and projections situated where the smallest bronchioles become continuous with the acini." Further, the part of the lung usually affected first is the apex—one of the most remote spots from the main respiratory passages.

Dr. R. C. Wingfield (1938) also refers to the intricacies of the respiratory tract and, answering his own question as to the method of deposit of tubercle bacilli in the lungs, says: "They may have been inhaled during contact with a case of pulmonary tuberculosis (a fact which, considering the beautiful mechanism of the respiratory tract, which on this assumption must have permitted a foreign body to penetrate to an ultimate alveolus, I find it hard to credit), or they may have been deposited by the blood stream, having seeped past the last lymphatic barrier into the thoracic duct."

Newsholme later refers to evidence of infection of the lungs through the bronchial glands, and says: "In this connexion must be noted the frequency with which, in man, pleurisy precedes other signs of pulmonary tuberculosis." He expresses the view, however, that "the predominant means of infection are the spray produced by the consumptive as he coughs and the dust of his powdered expectoration."

Sir Robert Philip (1934) has reached the opposite conclusion, and says: "I am, of course, well aware that the majority of opinion, pathological and clinical, favours—almost takes for granted—the view that human infection occurs generally by way of the respiratory passages. . . . I have been constrained by an overpowering weight of evidence in my own experience—clinical, pathological, and experimental—to relegate the lung [as the seat of primary infection] to a secondary place."

There is a factor which some observers have not taken into full consideration, and that is the general infection of our population in early life and the immunity that should be given thereby if our ordinary views with regard to most infections hold true. But the accepted explanation is a reinfection by inhalation of droplets or infected dust. In 1927 Professor S. Lyle Cummings said: "To sum up, the evidence was inconclusive, but there were two certainties—namely, that pulmonary tuberculosis was due to a reawakening of previous infection and that strong evidence existed in favour of reinfection." In 1932 Dr. W. H. Wynn summed up the position at that time in the following words: "The common conception of tuberculosis infection is that it generally occurs during the early years of childhood and that pulmonary tuberculosis in the adult shows the characteristics of localization and chronicity because it occurs in a person previously immunized by a mild infection in his early years." He adds that "it is difficult to bring certain facts—for instance, the morbidity at the ages between 20 and 30—into line with this theory," and then summarizes investigations made by

Heimbeck on the increase of infection with age. Dr. P. D'Arcy Hart (1932) quotes Dr. L. Cobbett as follows: "It is clear that an infected people is much safer than an uninfected people brought into contact with tuberculosis, but what price does it pay for this protection?"

Dr. A. Stanley Griffith (1930) observed: "It is often impossible, as is well known, to establish definitely by necropsy the paths of infection in chronic pulmonary tuberculosis in the adult. . . . In children, on the other hand, in whom tuberculosis runs an acute course, the primary seat and the mode of spread of the tuberculous disease can generally be recognized. The evidence from autopsies on children infected with bovine tubercle bacilli shows that the commonest route of invasion of the lungs by bovine bacilli is the blood stream."

Many other quotations might be given, but enough has been said to indicate the tendency to change in the general views on the problem and the existence of grave doubts as to pulmonary tuberculosis being due in all cases to respiratory infection.

Schemes for the Prevention, Detection, and Treatment of Tuberculosis

In view of the wide prevalence of tuberculosis a Departmental Committee recommended in 1913 that schemes for the above purpose should be promoted by local authorities, and these schemes have been in operation for some twenty-four years, steadily increasing in efficiency. It was hoped that cases would be detected at early stages, when treatment could be particularly useful, and that the segregation of patients while discharging bacilli would reduce the amount of disease, especially pulmonary tuberculosis.

During the time schemes have been in operation there has been a considerable fall in the death rates for all forms of tuberculosis, and in the Report of the Ministry of Health for 1937–8 it is said that the "figures may be considered to reflect the results of the combined attack on tuberculosis by the improvement of environment, including the great post-war housing achievements, by education in better habits of living, and by the direct measures of prevention and treatment outlined above." The figures mentioned show that for every 100 deaths in 1881–5 there were only forty-five in 1901–10 and eighteen in 1936 and 1937 for all forms of tuberculosis. The rates for pulmonary tuberculosis and other varieties of tuberculosis are given separately for 1901–10 and the last two years, and the falls in this period are from 100 to forty-five for the former and 100 to twenty-six for the latter. These statistics do not enable a comparison to be made between pre- and post-scheme periods, but figures supplied by the Registrar-General show that, while between 1881–5 and 1891–5 the fall in the death rate for pulmonary tuberculosis (England and Wales) was 22 per cent., that between 1921–5 and 1931–5 was not much more—namely, 24 per cent. It should be noted that the decrease for other forms of tuberculosis is very much greater than for pulmonary tuberculosis. In the notes in *Tubercle* of November, 1937, on the Annual Conference of the National Association for the Prevention of Tuberculosis, after a reference to the fall in tuberculosis mortality since the middle of last century, it is said: "In the absence of records there is no evidence that the fall has been expedited by any specific preventive measure taken to date."

The conclusions from the statistics would appear to be:

1. The fall in the tuberculosis death rate, which has progressed steadily from the time statistics have been available (except for a few years in the period of the war), has been associated with the great improvement of environment—housing, better habits of life—mentioned in the Report of the Ministry of Health.

2. There is no evidence of any appreciable change in the death rate for pulmonary tuberculosis due to schemes—greater segregation of patients, etc.

3. The fall in the death rate for non-pulmonary tuberculosis has been much greater than that for pulmonary tuberculosis, and, as is now known, a very great part of this trouble is caused by the form of organism known as the bovine tubercle bacillus. It would not be expected, therefore, that segregation of patients would influence greatly the numbers of these cases.

This aspect of the problem has been included as supporting the conclusions which may be drawn from the previous paragraphs as to the minor influence of persons suffering from pulmonary tuberculosis in the occurrence of all forms of tuberculosis in the community.

Types of Organism

During the present century intensive investigation has been made by various observers into the type of the organism found in lesions regarded as tuberculous. The greatest stimulus in this direction was due to Koch's startling statement at the British Congress on Tuberculosis in London in 1901, when he expressed the belief that tuberculosis in cattle did not infect man. The Royal Commission appointed as a result made an exhaustive survey with Dr. A. Stanley Griffith as one of their expert advisers, and as an outcome of his continued work the picture of to-day is very different from what it was in 1901. Many as have been the changes in the tuberculosis outlook, the most striking of all have been due to the work of the Royal Commission, A. Stanley Griffith, and his colleagues.

From the report of the Royal Commission it was learned that a vast amount of non-pulmonary tuberculosis was in fact attributable to animal sources, and the lesions yielded the form of organism usually associated with cattle, but up to that time there was no suggestion of this type of bacillus being found in pulmonary tuberculosis. Indeed, at the Washington Congress in 1908 (Griffith, 1930) Professor Koch maintained that bovine bacilli "had never been definitely demonstrated in a case of phthisis pulmonalis." Several members of the Congress, however, quoted instances. Dr. Griffith says that "Koch declined to accept this evidence as proving that the bovine bacillus may be the cause of phthisis pulmonalis, and it must be admitted that the evidence was not convincing," for reasons which he gives. The first two cases known in England were discovered by Dr. L. Cobbett and Dr. A. Stanley Griffith in 1907 and 1911 respectively, the last in the year of publication of the Final Report of the Royal Commission. These cases remained unique in England until 1930, when Dr. Griffith found one more. Meanwhile organisms in cases of pulmonary tuberculosis in Scotland were being typed by Dr. W. T. Munro, medical superintendent of Glenlomond Sanatorium, and in 1924 he and his colleagues reported finding the bovine bacillus in the sputum from three (in one mixed with human) out of 100 cases; previously Dr. Griffith had found the bovine bacillus in one Edinburgh case of seventy-three Scottish cases. In an address Griffith (1932a) said that the number of pulmonary cases in which the bovine bacillus had been found was forty-five (eighteen in England and twenty-seven in Scotland); this number was increased to nearly eighty in 1933, and over 120 in 1935 (Griffith and Munro, 1935). As a rarity he mentioned the discovery, in the same case, of both human and bovine bacilli. Cases have been reported also from the Continent—for example, four by B. Lange in 1931, in one mixed with human bacilli.

In organs other than the lungs the bovine form is found much more frequently. The percentages given for England in 1932 by Dr. Griffith (1932b) are: cervical glands, 45.7; lupus, 48.6; meningeal, 30.1; bone and joint, 18.0; genito-urinary, 17.4. In general, the younger the patient the higher is the proportion of the bovine form.

In a joint paper by Dr. Griffith and Dr. Munro (1935) attention was drawn to the fact that up to that time no evidence had been found of transmission of bovine phthisis pulmonalis from one human to another; they now reported two families with two cases of phthisis pulmonalis in adults and one glandular in a child, all with bovine bacilli. After weighing the evidence they concluded: "We think that familial infection is the more probable, since attenuated bovine tubercle bacilli are rare: they have

been found in only three other instances in upwards of 120 cases of pulmonary tuberculosis caused by tubercle bacilli of the bovine type."

In only few cases, apparently, has it proved possible to isolate strains from glandular and pulmonary lesions in the same subject. Dr. W. Melrose Cumming reports in 1933 having been able to do so in four instances of a series of 221 cases, the human type being found in the strains from all lesions: he adds that it was impossible by known laboratory methods to distinguish the glandular from the pulmonary strain. In view of the known high incidence of the bovine type of bacillus in glandular lesions he suggests that the pulmonary tuberculosis in such cases may be due to double infection. It should be mentioned that it is generally agreed that clinically there is nothing to distinguish the cases from which different types of organism have been cultivated.

Another complication is introduced by a suggestion in 1910 of a filterable virus which, inoculated into guinea-pigs, produced lesions from which acid-fast bacilli could be obtained. Dr. W. H. Wynn (1928) notes that these results had recently been confirmed by French workers.

Variation in Characteristics

This great increase in our knowledge has led many to consider whether or not the difference in the characteristics of the bacillus is due to the soil on which it has grown, and whether the human and bovine types are really forms of the same organism. The possibility was evidently in the minds of the members of the Royal Commission of 1901—with much less evidence than we have at the present time—when they said: "We are not prepared to deny that the transmutation of one type into another may occur in nature," and (in the report of 1907): "It is on account of the far-reaching bearings of the conclusion that we are unwilling to make any statement at all premature." Such a change in the characteristics would explain the smaller incidence of the bovine type in glandular, etc., tuberculosis as persons grow up. In some tissues—for example, the skin and meninges—the organism tends to retain the bovine characteristics longer than in others. In 1932 Dr. Griffith (1932a) said that in favour of mutation was the fact that bovine infection disappears as the individual develops, but it was against mutation that passage experiments were uniformly negative—(1) the human type remaining unchanged in calves up to 2½ years, and (2) similarly with the bovine type in chimpanzees. Dr. W. T. Munro (1932) said: "We have come across instances of transitional virulence in the strains isolated from sputum. Tubercle bacilli are remarkably constant in their virulence, and it may take years to effect any change in their characteristics, but these transitional characteristics suggest mutation of type in the human subject." Jensen and Kioer (1938) followed up 100 patients with pulmonary tuberculosis produced by the bovine type, and reported that, while only two were found to show a double infection at the end of one year, of seventeen observed up to four years no fewer than nine were found to have a mixed or double infection.

Evidence of variations in type has been given also by the work of Dr. Elizabeth A. Jackson (1934). Dr. J. W. S. Blacklock, speaking at Oxford in 1936, said: "While mutation of type has not been proved in the case of tubercle bacilli, yet it is stated to occur with other groups of bacilli."

Summary and Conclusion

The variations in our knowledge of tuberculosis during the past half-century have been very great, and have necessitated gradual—and at times sudden—changes in our views of this disease in its different manifestations. With the discovery of the *Bacillus tuberculosis* it might have been thought that all problems were solved, though as a matter of fact the results of investigations as to its nature have complicated the issue.

The idea of predisposition has survived the earlier views on heredity in connexion with tuberculosis, and indeed it is agreed generally that at least as important as infection is the resistance of the individual to the bacillus. The researches made on behalf of the Royal Commission of 1901 led not only to information as to the extent of bovine infection in non-pulmonary tuberculosis but also to evidence that the lesions, whether caused by the human or the bovine type of bacillus, were indistinguishable.

Further, investigations on post-mortem examinations showed that the incidence of infection was much wider than had previously been realized—from 35 per cent. in London to 42.5 per cent. in Christiania, and even 70 per cent. of children between 11 and 14 years in Vienna. The development of tuberculin testing provided information as to infection among living persons, increasing in one group of observations from 10 per cent. of children under 3 years of age to 100 per cent. at 40 to 50 years among a working-class population. Also, records from notifications received in Gloucestershire show that, while in early life infection is so general as to have been described as universal, the proportion of the population developing recognizable pulmonary tuberculosis is only 7 per 1,000 of the population, and other tuberculous trouble about half this proportion.

With the knowledge that tuberculosis was an infective disease and that pulmonary tuberculosis was the commonest cause of known trouble, it was assumed that the ordinary channel of infection was the respiratory passage. This aspect of the question has been the subject of close investigation, and evidence is given above to indicate that some of those who most strongly favour respiratory infection recognize the great difficulties in accepting this view fully. There is a further difficulty in the minds of many—that, with the knowledge that infection of persons is so general, it is not in accord with ordinary experience for a person who has tuberculous trouble to be affected by a new dose of the infection. However, the idea of reinfection is favoured by many, and the peculiar qualities of pulmonary tuberculosis are attributed to allergy in an already infected person. Cumming (1932) expressed the feeling of some persons when he said: "The two theories of exogenous and endogenous superinfection are not irreconcilable. Brought up in the former, converted to the latter, the writer is satisfied that both are necessary to explain all cases."

During the past twenty-five years intensive special measures for prevention and treatment have been in operation over the whole country, largely based on the theory of infection by inhalation, especially from droplets of infected sputum or infected dust, and it was hoped that with increasing segregation of persons with open tuberculosis the incidence of the disease would be reduced. Statistics show, however, that the fall in the death rate is little, if any, greater than it was in pre-scheme days, when it was dropping rapidly with steady improvement in all that makes for healthier conditions of life generally.

In the meantime the research of bacteriologists has greatly extended our knowledge of the organism. It was shown early that what is known as the bovine tubercle bacillus was the type of organism in a very large proportion of non-pulmonary lesions, but only in the last eight years has it been recognized, increasingly, how important a factor it probably is in pulmonary tuberculosis. Further, there is evidence that the characteristics of the organism do change after long periods of residence in the human body. The possibility of such change has not been accepted generally as yet, but bacteriological developments in the last quarter of a century have necessitated great changes in our outlook, and it may be that further investigations may throw yet further light on the matter.

Meanwhile, there would appear to be strong evidence in support of the view that the main source of infection of man is milk contaminated with the bovine tubercle bacillus, by way of the alimentary tract; that infection by the respiratory tract is far less common than is accepted

generally; and that our chief line of defence is the maintenance of resistance by every means conducing to a vigorous state of health.

[NOTE.—I did not see Dr. D. M. Dunlop's address on "Modern Views in the Prevention of Tuberculosis," in the *Journal* of December 24, 1938 (p. 1298), until the day after the proof of this article reached me. It supplements the train of thought I have endeavoured to convey, and may well be read in conjunction with it.]

REFERENCES

Assemblée Française de Médecine Générale (1933). *British Medical Journal*, **1**, 716.
Barnes, H. L. (1924). *Med. Annu.*, p. 475.
Blacklock, J. W. S. (1936). *British Medical Journal*, **2**, 324.
Blyth, A. Wynter (1876). *Dictionary of Hygiene and Public Health*, London.
Bulstrode, H. T. (1908). Supplement to 35th Annual Report of Local Government Board, London.
Cumming, W. M. (1932). *Brit. J. Tuberc.*, **26**, 69.
—— (1933). *Tubercle*, **14**, 205.
Cummings, S. Lyle (1927). *British Medical Journal*, **1**, 762.
Gordon, W. (1910). *Rainy Winds and Phthisis*, London.
Griffith, A. S. (1930). *J. Path. Bact.*, **33**, 1145.
—— (1932a). *British Medical Journal*, **2**, 501.
—— (1932b). *Edinb. med. J.*, **39**, 177.
—— and Munro, W. T. (1935). *British Medical Journal*, **2**, 147.
Hart, P. D'Arcy (1932). Med. Res. Cncl. Spec. Rep. Ser. No. 164, p. 86, London.
Jackson, E. A. (1934). *Proc. Soc. exp. Biol.*, N.Y., **31**, 1101.
Jensen, K. A., and Kioer, I. (1938). *Acta tuberc. scand.*, **12**, 105.
Koch, R. (1901). *Trans. Brit. Congress Tuberc.*, **1**, 23, London.
Lange, B. (1931). *Z. Hyg. InfektKr.*, **112**, 298.
Langmead, F. (1913). *Med. Annu.*, p. 521.
Metchnikoff, Elie (1912). *Warfare against Tuberculosis*, London.
Muir, R., and Ritchie, J. (1897). *Manual of Bacteriology*, p. 224, Edinburgh.
Munro, W. T. (1932). *Med. Off.*, **47**, 195.
—— *et al.* (1924). *Tubercle*, **6**, 18.
Newsholme, Sir Arthur (1908). *Prevention of Tuberculosis*, London.
Pearson, Karl (1912). *Times*, Sept. 6 (Report of British Association).
Philip, Sir Robert (1932). *British Medical Journal*, **2**, 1.
—— (1934). Ibid., **1**, 1105.
Roussel, P. (1922). *La Tuberculose Conjugale: Contagion et Mariage*, A. Maloine, Paris.
Rowland, S. (1924). *Lancet*, **2**, 1224.
—— (1926). *Med. Annu.*, p. 485.
Shennan, T. (1908). *Encyclopaedia and Dictionary of Medicine and Surgery*, **10**, 118, Edinburgh.
Tattersall, N. (1931). *Med. Off.*, **46**, 170.
Taylor, F. (1893). *Practice of Medicine*, p. 413, London.
Tillisch, Sofie (1921). *British Medical Journal*, **2**, Epitome, para. 342.
Turner, H. Midgley (1931). *Bull. Hyg.*, Lond., **6**, 160.
Whitelegge, B. A. (1899). *Hygiene and Public Health*, p. 347, London.
Wingfield, R. C. (1931). *British Medical Journal*, **2**, 787.
—— (1938). *Pulmonary Tuberculosis in Practice*, London.
Wynn, W. H. (1928). *Med. Annu.*, p. 496.
—— (1929). Ibid., p. 501.
—— (1932). Ibid., p. 542.

The Director-General of Health, New Zealand, in a report covering the year ended March 31, 1938, states that the period under review was memorable for an outbreak of poliomyelitis, ranking, from the point of view of magnitude and severity, with the major epidemics of 1916 and 1925. An account of the incidence of this disease during the last fifty years in New Zealand is given in a special appendix. With regard to the vital statistics as a whole the death rate rose to 9.08 per thousand from 8.75 in the preceding year. In view of the increasing number of people of advanced years now resident in New Zealand this rise was not unexpected, and a further rise is thought probable in the near future. A substantial reduction is recorded in the number of deaths from puerperal causes, excluding septic abortions. The proportion of confinements in maternity hospitals now exceeds 86 per cent., and although accommodation is adequate at present it is felt that saturation point will soon be reached. European births have been increasing by approximately one thousand per annum and every year a larger proportion desire a hospital confinement. The Maori women are also appreciating the advantages of this procedure.

EPIDEMIC NAUSEA AND VOMITING

BY

J. D. GRAY, M.D.

Miller and Raven (1936) recorded the outbreak of an acute infectious disease termed "epidemic nausea and vomiting" in a boarding-school for girls in Thanet. Their description followed that of a similar epidemic which took place in 1935 in Denmark, where the disease was first described as a clinical entity.

Towards the end of 1938 an outbreak occurred in South Hampshire. It is proposed to describe this epidemic, to show that the Thanet outbreak was not an isolated incident, and to suggest the probability of the widespread incidence of the disease. With the entity of the disease established and its symptoms remembered, medical officers of health may be saved the trouble of investigating food supplies, drains, kitchens, and stools in future institutional outbreaks. Lastly, it may be possible to rescue another disease from the conglomerate called "gastric influenza."

In general the picture is as follows: The illness is short, lasting about two days. The patient complains of dizziness, nausea, and vomiting. Less frequently, dizziness and nausea alone may occur. It is usually afebrile. In the South Hampshire epidemic frontal headache and occasionally bradycardia were also noted. In common with the Danish outbreak, diarrhoea was encountered in our epidemic, and a higher incidence of mild pyrexia was seen as compared with that in Thanet. As the epidemic occurred in an institution and the surrounding country at the same time, it will for convenience be given under separate headings.

The Epidemic in School A

This school is situated on Hayling Island and has eighty-two girls, boarders and day pupils. The staff, including servants, amounts to a further twenty. The health of the school before the epidemic had been good: the common cold was not unduly prevalent. The first case appeared on September 27, 1938, and the last on October 25. The spread of the disease is tabulated as follows:

Date	Dizziness, Nausea, and Vomiting		Dizziness and Nausea only	
	Children	Adults	Children	Adults
September 27 ..	1	—	—	—
„ 28 ..	1	—	—	—
October 8	1	—	—	—
„ 12	18*	—	—	—
„ 13	1†	—	—	—
„ 15	11	3‡	—	—
„ 16	1	—	—	—
„ 17	—	—	2	—
„ 18	3	—	—	—
„ 19	1	—	—	—
„ 20	3	—	—	1
„ 21	—	—	1	—
„ 25	1	—	—	—
Totals	42	3	3	1 — 49

* Included in this total are two day girls. Forty-eight hours after their attack the parents of each girl developed the disease.

† This child vomited during a Brownie class. Forty-eight hours later eleven other girls, two mistresses, and a maid in the room all developed the disease.

‡ One of these three cases developed diarrhoea.

Dizziness was present to some extent in all cases. It was most marked, however, in the three children who did not vomit. These patients could not sit up in bed without feeling faint. The best description they could give was that they felt "sea-sick." Six of the forty-two patients had bradycardia. Five of them had temperatures averaging 99.6°, lasting about a day. Twelve complained of a transient frontal headache. All except one were fit for school in three days; this patient took five days to recover, then relapsed, the relapse lasting three days. The medical officer of health for the district inspected the school with a view to tracing the cause of the outbreak. Food, milk, drains, etc., were all checked and absolved from suspicion. In pursuing his investigations six throat swabs from active cases were taken for culture and were reported on as follows: non-haemolytic streptococci, pneumococci, and sarcina in four swabs; the fifth contained a heavy growth of staphylococci, and the sixth haemolytic streptococci.

The Epidemic in the Countryside

The general health of the population on Hayling Island at the time of the epidemic was good. The usual number of autumnal colds were noted. In the cases described below, unless indicated, the physical examination was negative.

Case 1; September 26.—Adult male. An attack of acute nausea and vomiting at 3 a.m. with some epigastric tenderness. Apyrexial. Diarrhoea started at 6 p.m. the same day, and lasted twenty-four hours. No giddiness. Duration thirty-six hours.

Case 2; October 4.—Adult female. Dizziness, nausea, and vomiting of acute onset; diarrhoea set in during last twenty-four hours of attack. Apyrexial. Duration thirty-six hours.

Case 3; October 5.—Adult female. Dizziness, nausea, and vomiting of acute onset; temperature 99.4°; diffuse abdominal tenderness. A mild diarrhoea set in during the last day of illness. Total duration three days.

Case 4; October 8.—Adult female. An acute attack of nausea and vomiting. No giddiness; apyrexial. No diarrhoea. Duration twelve hours.

Case 5; October 10.—Male child. An acute attack of nausea and vomiting, starting at 2 a.m. No dizziness; apyrexial; no diarrhoea. Duration twenty-four hours.

Case 6; October 10.—Female child. An acute attack of nausea and vomiting lasting one day, followed by a mild diarrhoea lasting two days. No giddiness. Apyrexial. Duration three days.

Cases 7 to 10; October 12.—An adult female and her three children. The children all complained of dizziness and nausea; this was followed by vomiting. The attack set in during the night. It was apyrexial in all three and there was no diarrhoea. The mother complained more of nausea and vomiting than of dizziness. Diarrhoea set in during the last twenty-four hours of the illness. Apyrexial. Total duration two days. These four comprised all the members in the house.

Case 11; October 12.—Adult male. An acute attack of giddiness, nausea, and vomiting. Apyrexial. No diarrhoea. Duration twelve hours.

Case 12; October 13.—Adult male. Dizziness, nausea, and vomiting which lasted all night. In the morning, with the cessation of the nausea and vomiting, diarrhoea set in which lasted throughout the day. Apyrexial. Duration twenty-four hours.

Case 13; October 13.—Adult male. Dizziness, nausea, and vomiting. Apyrexial. No diarrhoea. Duration thirty-six hours.

Cases 15 to 20.—These cases represent another house infection. The description is in more detail, as it illustrates the variation of symptomatology that occurs. The first patient was the eldest daughter. She awoke at 2 a.m. on October 15 feeling very dizzy, got up, and promptly vomited. The dizziness, nausea, and vomiting lasted till noon of the same day. During this stage she had a right frontal headache. She was apyrexial. Total duration twenty-four hours. The second patient was the father of the first. He was attacked on October 17 with acute nausea and vomiting, and was apyrexial. There was no dizziness or headache. On the 18th the nausea had gone, but diarrhoea supervened that lasted till the 19th. The duration of the illness was two days. The next case was that of the wife. Her illness started on October 18 with an acute attack of vomiting accompanied by a frontal headache. Apyrexial; no diarrhoea; no dizziness. Duration eight hours. On the 18th the second daughter was attacked. She awoke at 4 a.m. with giddiness and anorexia, but did not vomit. This giddiness lasted two days. During the second day a mild diarrhoea supervened, which also lasted about two days. The giddiness was accompanied by a slight pyrexia (99°). There was no headache. Total duration three days. The fifth case was that of a cousin living in this household, who on October 17 awoke with intense giddiness and nausea; this was followed by vomiting. Apyrexial; no diarrhoea. Duration twenty-four hours. The sixth and last of this series was the mother of the preceding patient. On October 17 she began to feel giddy and nauseated. During the day this wore off, only to recur the following morning. This lasted for five days; on the sixth and seventh days diarrhoea occurred. On the eighth day the patient was quite well, but felt "washed out." No headache; apyrexial. Duration one week.

Case 21; October 15.—Female child. An acute attack of nausea and vomiting lasting five hours. Apyrexial; no dizziness or diarrhoea.

Case 22; October 15.—Female child. Dizziness, nausea, and vomiting; temperature 99.2°; diffuse epigastric tenderness. The attack passed off as the day advanced, but recurred the following morning, ceasing at midday. Duration thirty-six hours.

Case 23; October 17.—Adult male. Dizziness, nausea, and vomiting occurred acutely during the night. Diarrhoea set in during the morning, and lasted for twenty-four hours. Apyrexial. Duration thirty-six hours.

Case 24; October 17.—Adult female. Dizziness, nausea, and vomiting lasting twenty-four hours. Diarrhoea set in on the second day. Apyrexial. Duration two days.

Case 25; October 24.—Adult female. Dizziness, nausea, and vomiting; no diarrhoea; apyrexial. The attack lasted seven days, waxing and waning in intensity. Treatment was without effect.

Case 26; October 31.—Adult female. Frontal headache followed by giddiness, nausea, and vomiting; apyrexial; no diarrhoea. Headache lasted twenty-four hours and giddiness three days.

The total number of cases was twenty-six. Thirteen were females, six males, and seven children. The first case was seen on September 26 and the last on October 31. Nineteen patients complained of giddiness, twenty-four vomited, and all had nausea. Eleven had diarrhoea, three had slight temperatures, three had frontal headache, and three had abdominal tenderness.

Discussion

Miller and Raven, in reporting their epidemic, noted that it differed from the Danish syndrome in: (1) the Danish epidemics were not institutional; (2) the English epidemic had no relapses, whereas in the Danish this feature was seen; (3) diarrhoea was present in the Danish and absent in the English. In all other respects the epidemics were identical. The Hayling epidemic bridges the difference between the Danish and first English outbreaks in that the points not seen in the latter were present in our epidemic. Thus the disease may or may not be institutional. The common symptoms are nausea, vomit-

ing, and giddiness. Less commonly diarrhoea may follow the vomiting, and more rarely a pyrexia may be met with. Another symptom which was encountered here and apparently not noted before was that of frontal headache. Of the twelve cases of diarrhoea eleven occurred in adults.

As the disease is of such short duration it is difficult to decide what particular system is attacked. Earlier papers suggest either the gastro-intestinal or the nervous. So far, in all examinations made no organisms known to cause gastro-enteritis have been found. The greatest argument against a food or water contamination is the type of spread in families. Instead of the whole community going down at once there is a gradual peripheral spread from the first case noted in the institution or family. This can be well seen in our epidemic. In the school cases two children went home, and two days later both parents contracted the disease. In Cases 15 to 20 of the country epidemic the passage from one individual to others in the family is clearly shown. Evidence would suggest that it is a person-to-person infection with at least a two-day incubation period. As Miller and Raven suggest, the probabilities point more to an acute infection of the central nervous system, possibly of a virus type. All the symptoms except the diarrhoea may then be explained. Presumably a droplet infection is the mode of spread. It is difficult to assume that the attacks heretofore reported are isolated incidents; more probably the syndrome is kept alive by sporadic cases occurring about the country and only flaring to epidemic proportions when the environment is ripe.

The importance of this disease does not lie in its manifestations, which are mild, but in the possibility of its being confused with an outbreak of food poisoning or Sonne dysentery when it occurs in institutions. The latter are more serious matters than epidemic nausea and vomiting.

Summary

An outbreak of epidemic nausea and vomiting is reported.

It is suggested that the disease is endemic in this country and capable of assuming epidemic proportions at any time.

The possibility of confusing it with mild dysentery or food poisoning is noted.

I am deeply indebted to Drs. A. J. May and T. G. Anderson for permission to report their cases, and to Dr. W. S. Slater, medical officer of health for the district, for his kind help.

REFERENCE

Miller, R., and Raven, M. (1936). *British Medical Journal*, 1, 1242.

A. Turchetti (*Minerva med.*, 1938, **29**, 570), who records an illustrative case, states that he has found only one other example on record of peritonitis due to meningococci. This was reported in 1917 by Moeltgen in a man, aged 21, who developed this complication in convalescence from cerebro-spinal fever; laparotomy showed a diffuse purulent peritonitis from which a pure culture of meningococci was obtained. Turchetti's own patient was a man, aged 29, who was suddenly seized with severe abdominal pain, which diminished in a few days, leaving a diffuse abdominal discomfort. Three months later the pain became worse again and he developed a circumscribed fluctuating swelling in the left flank; aspiration produced a creamy greenish pus from which one pure culture of meningococci was obtained. Complete recovery took place. The case was of interest owing to the rarity of its causation and its resemblance to pneumococcal peritonitis.

SPORADIC INFECTIONS DUE TO B. TYPHOSUS

BY

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Recent epidemics of typhoid fever have focused attention on a disease hitherto infrequently met with by the majority of younger practitioners. It may be anticipated that one result of these epidemics will be to increase the number of typhoid carriers in this country, and that sporadic cases, or localized outbreaks, may be expected. Isolated cases are more likely to be missed in the early stages of the disease if only for the reason that the practitioner may not give prominence to typhoid fever in his differential diagnosis.

The following account of ten non-epidemic cases of typhoid fever seen during the last four years in two relatively small areas (population approximately 45,000 each) may serve to illustrate the protean nature of the disease in regard to its clinical manifestation, infectivity, and transmission. Unfortunately it is not always possible to prove conclusively the source of typhoid infections, and the investigator's deductions in this respect may be taken as those which appeared most likely from a mass of circumstantial evidence.

Case Histories

Case 1.—A schoolgirl aged 9 was notified as suffering from acute tuberculosis of a few days' duration. She was said to present symptoms similar to those shown by her brother (Case 2), who had died three weeks previously of "miliary tuberculosis." The salient features of the case were pyrexia, furred tongue, and constipation. Blood culture and subsequent Widal reaction confirmed an infection by *B. typhosus*. The patient made a good recovery.

Case 2.—In view of Case 1 the circumstances attending the illness of Case 2 (aged 8) were investigated, and it was found that the patient had eaten raw cockles from the foreshore three to four weeks before his death. The Widal reactions of the immediate contacts of Cases 1 and 2 were negative, and accordingly samples of cockles from the reported gathering-ground were examined. They were found to be heavily contaminated by sewage from an outfall, but no actual typhoid organisms could be demonstrated. No further cases arose as a result of these two cases.

Case 3.—A schoolgirl aged 12 was seen in consultation as a possible case of tuberculosis. Moderate pyrexia, constipation, and malaise were the only obvious findings. The Widal reaction, however, established the diagnosis of typhoid fever. The contacts gave no evidence as to the source, and food and water did not appear to be implicated. It transpired that the father had recently been employed in scraping the woodwork of a pier, which was contaminated by sewage organisms. His working clothes were so offensive that he was wont to remove them in the scullery, where they were hung up beside a sink. It was just possible that infection was conveyed by a towel, drinking-mug, or hands which came in actual contact with the contaminated clothing. The patient recovered and, so far as is known, did not infect others.

In the foregoing three cases a sewage outfall was suspected to be the vehicle of infection. The area served by the sewer was outside the observer's jurisdiction, but the investigations made failed to bring to light any other cases or carriers.

Case 4.—This case was discovered during a visit paid on receipt of information from the Department of Health for Scotland that a refugee from Spain had arrived in the area. The man, who was aged 20, had returned a week previously after service with

the Spanish Government. He stated that he had suffered from diarrhoea since the day he left Spain, but was receiving treatment from his doctor. He looked ill and his spleen was palpable, but there was no elevation of temperature. He was immediately removed to hospital, where he soon presented the textbook description of typhoid fever. Death ensued, and severe ulceration of the large bowel and part of the ileum was demonstrated. *B. typhosus* was isolated from the bowel lesions and the spleen. Despite exposure over the period of one week the man's wife and two children escaped infection, as also did three other families who used a common w.c.

Case 5.—A boy aged 9 was reported within three days of the onset of symptoms by a medical practitioner who had been circularized regarding Case 4. The patient, although not a near neighbour, resided in the same street as the previous case, and proved by Widal reaction to be suffering from a mild attack of typhoid fever. It may be noted that he had not been included in the list of contacts of Case 4. Investigations disclosed that he had been sailing toy boats in a wash-house tub, which contained soiled linen from Case 4, before the discovery that that case was one of typhoid fever. No further infections arose as a result of Cases 4 and 5.

Case 6.—A typist aged 20 complained of vague malaise and headache. Her medical attendant found that her temperature was slightly elevated, and it was suggested that a specimen of blood be obtained for examination. This showed a titre of 1 in 100 against *B. typhosus*. She was admitted to hospital, where she soon regained her former health. Apart from the positive Widal reaction and constipation, she presented no evidence of typhoid fever—faeces and urine being alike negative. Infection was presumed to have occurred while she was on holiday in the West of Scotland. No case followed this one, but reference will again be made to it in discussing Case 8.

Case 7.—A male factory employee aged 32 was admitted to hospital, as a possible case of typhoid fever, on the request of his doctor. The man had been ill for about seven days, and clinically the case suggested typhoid fever. Shortly after admission he became extremely ill, dying within forty-eight hours. The Widal reaction and a post-mortem examination confirmed the diagnosis of typhoid fever. It was found on investigation that the patient had frequently visited his mother, who had been suffering from "pneumonia" for a period of eight weeks. In view of the rather atypical history of illness the mother's blood was examined, and was found to give a positive agglutination reaction in high titre to *B. typhosus*. The mother is referred to as Case 8. Of the many individuals who came in contact with Case 7 before admission to hospital none contracted the disease, but unfortunately a hospital infection occurred (Case 9).

Case 8.—The mother of Case 7, aged 53, already referred to, was admitted to hospital, where examination of the faeces proved her to be a persistent carrier. Three weeks before the onset of her illness she had taken up duties as caretaker in an office where Case 6 was employed as a typist. The w.c. was common to the office and the caretaker's house. Although Case 6 was again found to be negative for *B. typhosus*, the possibility of a temporary carrier condition and consequent transmission of the disease to the caretaker could not be discounted.

Case 9.—This patient, aged 28, was temporarily a resident medical officer in the fever hospital for two weeks, and performed the post-mortem examination of Case 7. It was learned with regret that after his return to his home county he developed what at first appeared to be tonsillitis. The Widal reaction indicated that he had a *B. typhosus* infection. He recovered after a sharp attack of typhoid fever, and expressed the view that some contaminated material might have splashed his shoes at the post-mortem examination, and that, in adjusting the shoe-laces later, he had conveyed the infection to his mouth by means of a cigarette or food. Certainly the probable date of his infection coincided with the day on which the post-mortem examination was performed. The case was diagnosed and treated outside the Kirkcaldy area, but is included because of the close association with Case 7.

Case 10.—A long-distance bus driver, aged 37, was sent to hospital as a case of typhoid fever (confirmed by Widal reaction) by a doctor who had just taken over a colleague's cases during the latter's absence on holiday. The man had been ill for some time with symptoms suggestive of rheumatism, and had, after a week's illness, been ambulant, only to relapse. In hospital the case pursued the course of a severe typhoid infection with haemorrhage from the bowel, but ultimately the patient recovered. Owing to the nature of his employment—that is, being absent from early morning to late evening—there were no local contacts other than his wife, who escaped infection. The time-table of his working hours showed that during the period when his infection probably occurred he had partaken of meals in two areas of the country where typhoid fever was reported.

Table of Findings at the First Investigation (B. typhosus only)

Case	Blood Culture	Widal	Faeces	Urine
1	negative	1/400	positive	negative
2				
3	"	1/800	negative	"
4	positive	1/200	positive	"
5	negative	1/200	negative	"
6	"	1/100	"	"
7	"	1/1,600	positive	"
8	"	1/1,600	"	"
9	"	1/1,600	"	"
10	"	1/800	"	"

Conclusion

The ten cases recorded were the only *B. typhosus* infections detected during the period in the areas, in which no epidemic had occurred for many years. In only two instances was typhoid fever suspected during the initial stages of the disease.

Such cases of sporadic typhoid illustrate: (*a*) the difficulty in establishing a correct and early diagnosis on clinical grounds alone; (*b*) the importance of obtaining a specimen of blood for examination in any obscure case of fever or indefinite illness; (*c*) the apparent variation in susceptibility of individuals to infection; (*d*) that transmission of the disease may occur in so many ways that each case presents an individual problem; (*e*) the value of close co-operation between the medical practitioner and the medical officer of health.

A Dental Emergency Committee which has been set up by the Minister of Health in conjunction with the dental organizations has arranged for the establishment of a Register of Dentists who are willing to volunteer for national service in war-time. This register is being compiled on the basis of replies made by dentists to a questionary which has already been circulated to them by the dental organizations. Its object is to secure that the services of the profession will be used to the best advantage in an emergency. All dentists should have already received a copy of the questionary, and now that the *National Service Guide* is being distributed some of them may be wondering whether they are expected also to complete the forms of application for enrolment inserted in the *Guide*. Those dentists who have already completed the questionary and returned it to their organizations—and these represent about 85 per cent. of the profession—need not take any further action. The information they have already furnished is being collated for the guidance of the Government Departments concerned.

FOUR-LEAD ELECTROCARDIOGRAMS TAKEN 53 HOURS BEFORE AND AFTER THE ONSET OF AN ATTACK OF CORONARY OCCLUSION

BY

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By a rare coincidence a four-lead electrocardiogram was taken of a patient fifty-three hours before and again fifty-three hours after the onset of an attack of coronary occlusion.

Case History

The patient is a woman of 76 who is known to have been suffering from hypertension for at least fourteen years: in 1924 her blood pressure was found to be 220. At the time of her first consultation her chief symptoms were general exhaustion, giddiness, and dyspnoea on exertion. On examination she presented the typical features of a case of essential hypertension of long standing: marked dilatation of the heart to the left, accentuation of the second sounds over the base, blood pressure 240/130 on the right and 230/120 on the left arm; no signs of congestive heart failure. The electrocardiogram showed normal rhythm of about 68, left axis deviation, slight slurring of the descending limb of R_1 and the ascending limb of S_1, QRS of 0.08 second, a deep S wave in Lead II, and a depression of 1 mm. of the R–T interval in Lead I with a corresponding elevation of S–T in Lead III. A small Q wave of 1 mm. is present in Lead I. The chest lead, taken by means of a technique described elsewhere (Schott, 1938), shows a well-developed R (normal), deformation of S–T, and inversion of T (Fig. 1a).

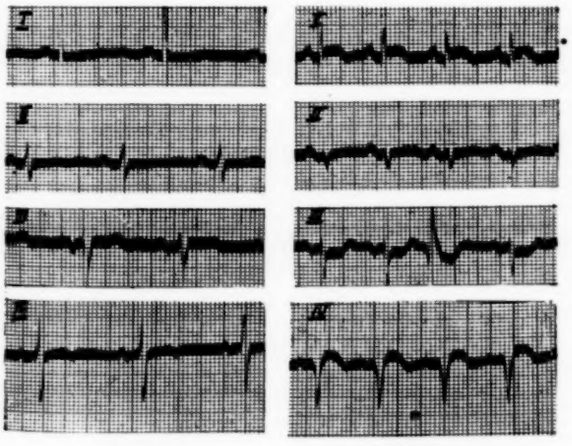

FIG. 1a.

FIG. 1b.

Fifty-three hours after this record was taken the patient developed the symptoms of an attack of coronary occlusion, with agonizing precordial pain which necessitated the giving of morphine. At the time of the second consultation the pain had largely subsided, but the patient was very weak and at times delirious. Her temperature was 100°, pulse rate 107, and blood pressure 100/75. The second electrocardiogram (Fig. 1b), taken fifty-three hours after the onset of the attack, shows in the three standard leads the typical features of a recent occlusion in the anterior wall of the heart, so-called T_1 type: high take-off of T from the descending limb of R and dome-shaped R–T interval in Lead I, low take-off of T and curved S–T interval in Lead III, the initial ventricular complexes in Lead II having become much smaller and one ventricular extrasystole being visible in Lead III. The chest lead shows that the initial upstroke of the ventricular complexes has completely disappeared and the intrinsic deflection is monophasic; the S–T interval is greatly displaced upwards and is deformed; T is inverted. These features of the chest lead are in agreement with those first published by Wood and Wolferth and subsequently confirmed by various authorities (see the extensive bibliography in Bohning and Katz, 1938).

Commentary

The comparison between the two records is, moreover, of interest when evaluating the clinical significance of changes in the S–T intervals and T waves in cases of long-standing hypertension with marked left axis deviation. Whereas some authors hold the view that in cases of pronounced hypertrophy of the left ventricle with left axis deviation inversion of T and depression of S–T in Lead I with corresponding elevation of S–T and positive T in Lead III is a result of the hypertrophy itself (Barnes and Whitten, Wilson and Herrmann), others find that these changes are indicative of additional myocardial disease (Freundlich, Proger and Minnich with regard to a flat T_1). Van Nieuwenhuizen and Hartog (1937) come to the conclusion that a negative T_1 and positive T_3 in cases of left axis deviation usually occurs in cases with myocardial damage, whereas the convexity of $S–T_1$ and concavity of $S–T_3$ is the result of pronounced dilatation. In the case under discussion the depression of $R–T_1$ and elevation of $S–T_3$ was only 1 mm., and T_1 was positive although flat; yet the fact that this patient developed coronary occlusion such a short time afterwards constitutes strong clinical evidence that advanced coronary changes must have been present. So far as it is possible to draw any conclusion from a single observation, these findings tend, therefore, to support the view that displacements of the S–T and R–T intervals, and even flattening of T_1, may mean more than just an expression of gross hypertrophy. In this connexion it is noteworthy that the chest lead taken before the attack showed conspicuous deformation of S–T and inversion of T. In view of the findings of van Nieuwenhuizen and Hartog, changes of this kind in the chest lead cannot be regarded as being caused by the hypertrophy or dilatation of the left ventricle. In cases of hypertension with left axis deviation and flattening or inversion of T in Lead I, positive T in Lead III, and deformation of R–T (S–T) in Leads I and III, it may therefore be possible, by correlating the findings of the chest lead with those of the standard leads, to arrive at a more accurate evaluation as to the clinical significance of those changes in the standard leads.

REFERENCES

Bohning, A., and Katz, L. N. (1938). *Arch. intern. Med.*, **61**, 241.
Schott, A. (1938). *Lancet*, **1**, 1163.
Van Nieuwenhuizen, C. L. C., and Hartog, H. A. P. (1937). *Amer. Heart J.*, **13**, 308.

P. Pederzdi (*Minerva med.*, 1938, **29**, 311), who records a personal case, illustrates the frequency of primary carcinoma of the gall-bladder by the following statistics. Giordano found it in every seventeen cases of operation for calculous cholecystitis, or in about 6 per cent.; Bertolini's estimate was 16 per cent. in one series and about 4 per cent. in another. In 23,675 necropsies performed at Parma, Dalla Valle found tumours of the gall-bladder in thirty-nine. Cancer of the gall-bladder is from two to five times more frequent in women than in men, and is commonest about the age of 50, though Moxon described a case in a child of 4 years. Its association with cholelithiasis ranges according to different observers from 60 per cent. (Borkowski) to 100 per cent. (Janowski; Siegert). Experiments on animals confirm the aetiological importance of cholelithiasis in the production of cancer of the gall-bladder.

OPERATION FOR FRACTURE OF THE OLECRANON

BY

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Fractures of the olecranon process of the ulna treated on accepted lines are, in the hands of the most experienced surgeons, always an anxiety. If the fracture shows little separation of the fragments splintage in extension is usually adopted and the question of when movement should be allowed is a matter of judgment. It is quite certain that bony union cannot be sound enough under six weeks to allow of any forcing of movement without the risk of separation of the fragments. In cases in which separation of the fragments is present open operation is usually practised, the fragments being drilled and approximated by suture.

We are dealing with disturbance of continuity in an articular surface, and in my experience in fractures of the olecranon it is difficult to ensure absolutely accurate restoration of this. Suture of the fragments by wire, if accurate and firm, allows of earlier movement of the elbow, but it has the disadvantages of the other forms of suture in that accurate apposition of articular surfaces is difficult and that tilting of the fragments may occur if early movement is allowed. It also involves the use of a material which is foreign to the tissues, cannot be absorbed, and will, in a percentage of cases larger than many of us think, demand removal at a later date.

Two years ago I had under treatment a patient with a fracture of the olecranon, a fracture of the humerus, and a fracture of both bones of the forearm. As treatment of the fracture of the olecranon on orthodox lines would have interfered with treatment of the other fractures, I removed the detached portion of the olecranon, repairing the triceps tendon and its expansion. What interested me was that full functional recovery of movement in the elbow in this patient occurred naturally. During the same week I had wired a similar fracture in a gentleman whose anxiety was to be fit for fishing in Scotland two months later. Only a special rod socket made by Hardy Bros. allowed him to indulge in his favourite pastime, and a year later movements were not complete and there was some ulnar neuritis. This is, I believe, the last fracture of the olecranon I will ever suture.

After my experience of Case 1 I saw one similar to Case 2 in a man aged 67—a fracture of the olecranon with a half-inch separation of fragments, much swelling and bruising, and abrasions which necessitated postponement of operation for three days. Operation consisted of removal of the detached portion of the olecranon, repair of the triceps and its expansion, with splintage of the elbow at an angle of 120 degrees. Ten days later the stitches were removed and active movement encouraged. When seen six weeks after operation both extension and flexion were limited by 20 degrees, but the patient informed me that three weeks after operation he was riding and using the cross-cut saw.

For two years my colleagues Mr. F. G. Allan, Mr. R. Bewick, and Mr. A. M. Hendry, who are responsible for fracture clinics in this area, have adopted removal of the detached fragment as the routine treatment of fracture of the olecranon, and are satisfied that the period of disability has been reduced and that a complete restoration of function is more certain.

Clinical Memoranda

Otogenic Cellular Meningitis Treated with M & B 693

The following case is, I think, of sufficient general interest to be worth publication.

CASE HISTORY

A girl aged 10 was admitted to King's College Hospital on September 26 because of pain in the left ear of three days' duration, which for the past thirty-six hours had been associated with a severe headache and frequent vomiting. There was no previous history of trouble in the left ear, although one year before there had been a discharge from the right ear following tonsillectomy.

Her temperature on admission was 103° F. and the pulse rate 132. The left tympanic membrane was red and bulging. The right tympanic membrane appeared normal except for a scar from the previous infection. There was considerable neck rigidity but no head retraction; Kernig's and Brudzinski's signs were present; the tendon and abdominal reflexes were sluggish, and there was an extensor Oppenheim reflex. Left myringotomy was performed at once, and a flow of pus obtained. Examination and culture of the pus showed pneumococci, which were not typed. Lumbar puncture gave an opalescent fluid under increased pressure. This contained 600 cells (89 per cent. polymorphs) and 130 mg. per 100 c.cm. of protein. Chlorides were normal. No organisms could be found in direct smear or culture.

Treatment with M & B 693 was started six hours after admission, four tablets (2 grammes) being given every four hours. At first some of this was vomited, and on two occasions the intramuscular preparation was used. In the first

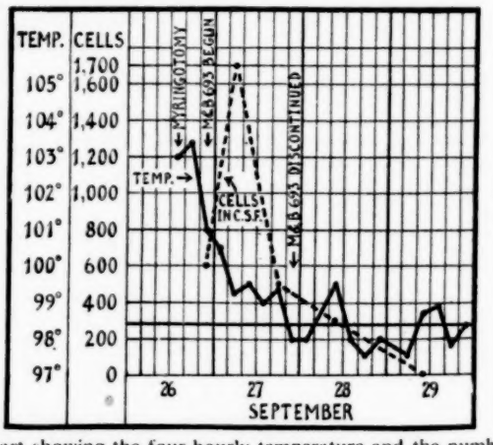

Chart showing the four-hourly temperature and the number of cells in the cerebrospinal fluid.

twelve hours of treatment approximately 6½ grammes were retained; in the second twelve hours 5 grammes; in the third twelve hours the dose was reduced and 3 grammes were given. The drug was then discontinued. Apart from twice-daily lumbar puncture and frequent cleansing of the ear no other treatment was given. After twelve hours there was a diminution of neck rigidity and the temperature had fallen, though the cells in the cerebrospinal fluid had increased. After twenty-four hours the temperature was normal and the cells had decreased, and sixty hours after beginning treatment the temperature, pulse, and cerebrospinal fluid had returned to normal. The aural discharge, which was copious at first, began to decrease on the third day, and by the fifth day the ear was dry. Further recovery was complete and uneventful.

DISCUSSION

This case was evidently one of otogenic meningitis of the cellular type—that is, bacterial invasion of the meninges had not occurred. The origin of the condition was an acute pneumococcal otitis media, and the spread of infection must have been by preformed spaces or vascular channels, because there could not have been time for the disease to erode the bony boundaries of the middle-ear cleft. This case is not strictly comparable to those described by Reid (1938) and Robertson (1938), in both of which pneumococci were present in the cerebrospinal fluid. It is nevertheless of interest in view of the very rapid recovery of both ear and cerebrospinal fluid immediately following the administration of large doses of M & B 693. Also the presumable absence of bony infection made active surgical intervention not only unnecessary but dangerous, by possibly causing the infection to spread even further.

SUMMARY

A case of otogenic cellular meningitis is described, the condition being secondary to acute pneumococcal otitis media. Rapid and complete recovery followed treatment with M & B 693, repeated lumbar puncture, and conservative treatment for the ear.

I am indebted to Mr. T. Cawthorne for permission to publish this case, which was under his care, and also for his assistance in preparing this report.

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REFERENCES

Reid, G. C. K. (1938). *Lancet*, **2**, 619.
Robertson, K. (1938). Ibid., **2**, 728.

A Case of Explosion during Anaesthesia

During a bronchoscopy with distal electric lighting in the ear, nose, and throat department of the Royal Infirmary some months ago a small explosion occurred which might have led to serious consequences. The patient was under general anaesthesia maintained by the usual Shipway apparatus, *chloroform* being delivered along with oxygen from a cylinder. Ether was definitely "off," according to the stopcock indicator. In the course of the examination a small round ball of white flame appeared about six to eight inches above the aurist's left eye, accompanied by a loud report. Apart from depositing some carbon on the eye of the examiner the explosion did not spread to the patient, who might have been seriously, or even fatally, injured.

On investigation the cause of the explosion was correlated with a defect in the design of the apparatus. While such apparatus is now fitted with valves to give protection against possible ejection of liquid anaesthetic owing to wrong tube connexions, no provision is made for preventing ether vapour from finding its way along the delivery tube, either from its own evaporation or from being drawn over by partial vacuum set up when the chloroform bottle is in use. With this experience we now disconnect the ether side of the apparatus completely when electrical equipment is to be used, but prefer a recent model that, in addition to other improvements, *automatically* cuts off the ether side and so eliminates the risk of explosion.

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Reviews

ENCYCLOPAEDIA OF MEDICAL PRACTICE VOL. IX

The British Encyclopaedia of Medical Practice, including Medicine, Surgery, Obstetrics, Gynaecology, and Other Special Subjects. Volume IX, Mumps to Pneumothorax, Spontaneous. Under the General Editorship of Sir Humphry Rolleston, Bt., G.C.V.O., M.D. (Pp. 752; 153 pages of index; 117 figures; 10 plates. 35s. net.) London: Butterworth and Company. 1938.

The ninth volume of the new *Encyclopaedia* covers the subjects Mumps to Pneumothorax. The former is dealt with by Dr. J. D. Rolleston and is an expression of his wide experience. Plague, another infectious disease, in the hands of Dr. Fabian Hirst receives full attention from the point of view of epidemiology and bacteriology as well as its clinical aspects, diagnosis, and treatment. A long section on affections of the peritoneum is divided between Mr. Zachary Cope on the problems and management of acute peritonitis, Dr. Lakin on chronic peritonitis and the non-inflammatory diseases of the peritoneum, and Dr. Kellett on tuberculous peritonitis in children. In the acute cases of streptococcal infection sulphanilamide is highly recommended; evacuating the bowel by rectal tube and enema gives relief, but usually one ounce of ox bile is needed. The special subjects of diseases of the nose, nasopharynx, and pharynx receive full treatment by Mr. Lionel Colledge, while Professor Grey Turner is responsible for diseases of the oesophagus and Mr. Denis Browne for the surgery of cleft-palate and hare-lip. Gynaecological chapters are those on ovarian disease by Professor Johnstone and Mr. Chalmers Fahmy, and on the development and diseases of the placenta by Professor Browne. Affections of the thorax include lobar pneumonia by Dr. R. A. Young, pneumothorax by Dr. Chandler, pneumoconiosis by Dr. W. E. Cooke, who promises further differentiation under the general term "silicosis" in a later volume (*x*-ray films do show differences in the various forms of dust-inhalation disease), and a review of the aetiology, diagnosis, and treatment of pleurisy by the late Dr. Burrell, perhaps the last paper he had the opportunity of revising.

Dr. Donald Hunter deals with the problems of hypo- and hyper-parathyroidism, a subject of which he has made special study, and Dr. Gardiner-Hill is responsible for the sections on diseases of the pituitary gland and myxoedema. The clinical pictures of the various tumours of the pituitary are emerging into clearer definition. Mr. C. P. G. Wakeley describes the clinical aspects and treatment of tumours of the pineal body, and the developmental abnormalities and affections of the pancreas; Sir Girling Ball and Mr. Underwood, diseases of the scrotum and penis; Mr. Illingworth, tumours and other morbid conditions of the neck; and Mr. Payne, diseases of the parotid gland. The group of nervous conditions includes a good review of the anatomical basis of pain, measures for its control or relief, and a shrewd comment on the features of psychogenic pain by the late Professor Woollard and Dr. F. M. R. Walshe. Professor Woollard is associated with Dr. Blake Pritchard in the report on nerve injury and repair, while Dr. Feiling deals with neuralgia of local origin and neuritis in general. A number of other chapters on diseases of the neuromuscular apparatus are divided between Dr. Purdon Martin and Dr. Nattrass. The section by the former on neurosyphilis is an excellent summary of the subject.

The problems of nephritis and nephrosis are in the capable hands of Dr. Izod Bennett; at the foot of page 143 it is the "non-protein" nitrogenous constituents of the blood which are normal, as the proteins are considerably diminished in all grave cases of nephrosis. Oversea contributors are Dr. Jonathan Meakins on oedema and Dr. de Crespigny on phosphaturia. A series of articles on skin diseases is included in the volume, which maintains fully the standard of its predecessors. Some beneficial results have been reported in mycosis fungoides with hyperthermy treatment other than induced malaria.

ANALYSIS OF FOODS

The Chemical Analysis of Foods and Food Products. By Morris B. Jacobs, Ph.D. (Pp. 538; 56 figures, 65 tables. 25s. net.) London: Macmillan and Co. 1938.

This is a handbook prepared for the guidance of practising analysts of foodstuffs. It is evidently the author's intention to provide all the details of information which are requisite to bridge the gap between a knowledge of pure chemistry and its application to the purpose intended. Food analysis is a subject involving much intricacy of management; it is one in which accuracy as to the quantity of a constituent may have to be subordinated to measures taken to avoid uncertainty as to its entire identity, and a compromise with precision may often have to be made. It is in this regard that the writer of a textbook may excel by indicating how the compromise may be narrowed and how the sacrifice of precision may be minimized. Jacobs has a large store of personal experience involving contact at first hand with the difficulties of the subject, and the book reflects this body of experience as well as an extensive fund of information gathered from many sources.

The book contains abundant information on the methods of preparation and the constituents of foods, both the manufactured and the natural kinds, supplying knowledge of great value in the application of analytical methods. It discusses also the many and varied forms of adulteration that have been practised at different times and others that have occurred through accident; it thus furnishes a broad indication of the nature of the foreign ingredients that may call for detection. The purely scientific aspect of nutrition is also discussed. The constitution of the vitamins is described for all the cases in which it is known, and the character of those which are generated by irradiation is explained in relation to their parent substances. Tables of a helpful nature are given in an appendix, by which the concentration of solutions can be determined from their specific gravity, refractive index, and other constant data. The book may be commended to analysts of foodstuffs; it appears likely to prove no less useful in this country than in the United States.

MENINGIOMAS

Meningiomas: Their Classification, Regional Behaviour, Life History, and Surgical End-results. By Harvey Cushing, M.D. With the collaboration of Louise Eisenhardt, M.D. (Pp. 785; 685 figures, 23 tables. Frontispiece. 15 dollars.) Baltimore, Maryland: Charles C. Thomas. 1938.

The type of cerebral tumour which Cushing has called meningioma has held a special place in neurological surgery ever since the first successful removal of a tumour of this type indicated the possibilities of intracranial surgery. No one is more entitled to write about these tumours than Dr. Cushing, to whose own work, as well as to that of his pupils and colleagues, we owe most of our present knowledge of their nature and symptomatology. The present volume is an epitome of this work, and consists of an analysis of 313 cases of meningioma from both the clinical and pathological aspects.

The clinical classification according to the position of the tumour within the cranium is justified by the close relationship between symptomatology and site of origin which is shown by these tumours. This is particularly evident in the case of tumours near the sella turcica, in which a difference of one or two centimetres in the point of attachment to the dura mater may completely change the clinical picture. The greater part of the book, over 600 pages, is devoted to this subject, and consists of detailed case records abundantly illustrated. This method of presentation, which is now familiar in American neurosurgical monographs, gives the authors an opportunity to discuss the improvements in diagnostic and therapeutic technique which have taken place since the series began, and adds interest to the book as a record of achievement.

The histological classification of these tumours is less simple, but the grouping suggested by the authors serves a useful purpose and is less open to criticism than others which have been proposed. It may seem inappropriate to include among the meningiomas the haemangioblastomas and chondromatous tumours: the former because they are of blood-vessel origin, and as such have been described by Dr. Cushing in another book; the latter because of their apparent relationship to the bones of the skull rather than to the meninges. On the other hand, the authors have done a useful service in emphasizing the occasional finding of more rapidly growing and malignant types of meningeal tumour, since the prognosis in such cases depends on well-informed histological diagnosis.

The high price of the book is justified by the abundance of illustrations and the general excellence of the format.

PHYSIOLOGY OF THE CENTRAL NERVOUS SYSTEM

Physiology of the Nervous System. By J. F. Fulton, M.A., D.Phil., M.D. (Pp. 676; 94 figures. 25s. net.) London: Oxford University Press. 1938.

It is curious that, with such a large original literature, there are so few authoritative textbooks on the physiology of the central nervous system. Therefore it is certain that the present work by an acknowledged authority will be received with great interest. The author, as a former pupil of Sir Charles Sherrington, is well equipped to present the subject as viewed from the important standpoint of that school, and to incorporate into his description the valuable work which has been carried out in recent years in the United States, and not least in his own laboratory. Thus the illuminating researches of Lorento de Nó on the oculomotor nucleus, of Dusser de Barenne on sensory localization by the use of the strychnine method, and his own studies of the motor and pre-motor cortex, autonomic representation in the cerebral cortex, the functions of the frontal lobes, etc., all find their place in the text.

The chapter on the architectonics, cytoarchitecture, and projections of the cerebral cortex was written largely by Dr. Lorento de Nó, and represents a most valuable contribution to the subject. Instead of focusing attention on the horizontal stratification of the cortex, he shows that the whole vertical section is to be regarded as a unitary system, the cortical cells being arranged in vertical chains, whereas the architectonic layers merely indicate where the bodies of cells, which are similar links in the chain, are located. This cannot but be a salutary change of outlook for physiology. The chapters on the autonomic system and its relation to the hypothalamus are well up

to date and open up new and interesting views. In the thalamus the new work of Le Gros Clark and Earl Walker is incorporated. The functions of the basal ganglia are evidently now being rapidly elucidated, and even the outlook on the cerebellum seems to be less depressing than has latterly been the case.

The book is essentially academic in its outlook rather than clinical, and should make a landmark in the literature of neurology. There is a comprehensive bibliography of 1,361 references, with titles, and subject and author indexes. It is to be regretted that the subject index is rather scrappy and irregular, as this gives a very poor idea of the very extensive contents of the book.

SURGERY OF THE LUNG AND PLEURA

Chirurgie der Lungen und des Brustfelles. By Dr. Alfred Brunner. Band 26. (Pp. 282; 112 figs. RM. 22.50; bound RM. 24.) Dresden and Leipzig: Theodor Steinkopff. 1938.

The publication of new monographs on thoracic surgery continues. Indeed it appears that books are tending to outstrip the actual progress made in this branch of surgery, which is slow and laborious if by progress is meant the establishment on a sound basis of new procedures and operations. The name of Dr. Alfred Brunner, who has written *Chirurgie der Lungen und des Brustfelles* in the series *Medizinische Praxis*, the object of which, the editors emphasize, is strictly practical, commands respect. For eleven years he was assistant to Sauerbruch, and since 1926 has directed the surgical department of the Kantonsspitals St. Gallen in Switzerland. But in writing this book the author has fallen between two stools. It is rather too detailed for the physician or general practitioner who wishes to acquaint himself with the surgical possibilities in diseases of the chest. On the other hand, the surgeon will probably prefer to consult the larger and more profusely illustrated works recently published, such as those by Sauerbruch and O'Shaughnessy, or by Schmidt, Kremer, and Hein. A valuable feature of the book by Brunner is, however, the account he gives of his own experience and results. The reproduction of the skiagrams is not very satisfactory, but a word of appreciation should be said for the author's practice of reproducing at the side of the skiagrams of the chest, before and after partial thoracoplasty, a photograph of the actual portions of ribs removed.

TRAUMATIC NEURASTHENIA

Traumatic Mental Disorders in Courts of Law. With a General Survey of Medical Evidence and Procedure in Civil Actions. By William A. Brend, M.A., M.D., B.Sc. (Pp. 104. 7s. 6d. net.) London: William Heinemann (Medical Books). 1938.

Mental disturbance as a disability resulting from accident is one of the most perplexing problems of the law courts. Claims are made from time to time against motorists or transport companies for damage for mental or nervous injury resulting from an accident due to negligence of a driver, but most cases of traumatic neurasthenia appear as claims for workmen's compensation. They are usually little understood by lawyers and inadequately explained by doctors. Dr. Brend has written a valuable guide to this difficult problem. He had great and varied experience during the war as officer in charge of the special board for functional nerve disorders, and afterwards as neurologist to the Ministry of Pensions. He has also had many years' experience as a medical witness in insurance cases.

One of his first objects in writing the book is, he says, to improve the quality and status of the medical witness. He feels, with justice, that medical evidence in courts of law is not in a satisfactory position. Views are expressed by medical witnesses which are widely at variance with the medical canon; medical bona fides is impugned, and rebukes by judges are regrettably frequent.

Dr. Brend is convinced that many of these reproaches are due to the limitations of standard textbooks on forensic medicine, which deal with medical evidence entirely from the criminal point of view. The requirements of courts in civil cases are different and often much more complex. He has accordingly tried to set out the difficulties of the inexperienced medical witness and to suggest how to meet them. He describes clearly the chief forms which may be taken by traumatic neurasthenia and gives valuable advice on the examination of patients, a concise survey of the chief points of variance between the legal and medical outlooks, and an outline of the duties of the medical referee under the Workmen's Compensation Acts. One suggestion he makes for remedying the present position of the medical witness is the establishment of boards under the medical referee, and in addition he points out the need for better facilities for the treatment of injured workmen.

Notes on Books

Dr. LESLIE HARRIS has brought the text of his *Vitamins in Theory and Practice* up to date by mentioning the fact that vitamin B_1 has indeed been synthesized and that, as the diphosphate, it acts as the co-enzyme, "co-carboxylase"; that nicotinic acid or its amide is probably the pellagra-preventive factor or is closely related to it; that calciferol made by the irradiation of ergosterol is a different substance from vitamin D_3 made by the irradiation of 7-dihydrocholesterol and occurring naturally in fish-liver oils; and that vitamin A has been separated from oils containing it by molecular distillation and then crystallized. The form of the book and its price (8s. 6d.) are unaltered. It is published by the Cambridge University Press.

The sixth edition of *Organic and Bio-chemistry*, by Dr. R. H. A. PLIMMER, has been revised so as to give an account of the more important advances that have occurred in the subject during the five years since the appearance of the last edition. As the number of editions indicates, it is a well-known textbook with a firmly established popularity. No major alterations have been made and the volume retains its previous size and form. It is published by Longmans, Green and Co. at 21s.

In his *Plan for the Organization and Regulation of Blood Transfusion in Buenos Aires*, which has been reprinted from *La Prensa Medica Argentina* of April 13, 20, and 27, 1938, Dr. EMILIO S. SAMMARTINO gives the detailed description of a transfusion service in which he has acted as a pioneer.

Social Interest: A Challenge to Mankind, by ALFRED ADLER, is an English translation by John Linton, M.A., and Richard Vaughan (Faber and Faber, 10s. 6d.). Dr. Adler wrote many books, but while the earlier works presented an interesting and important point of view, in his later years there was a tendency to dogmatic harping on the same theme without the addition of any original thought. This book evokes the respect and interest which the posthumous works of a leader in any branch of knowledge must command, but those who have studied all his works will gain nothing new, and those who are unacquainted with Adler's views would perhaps do better to follow the development of those views from some of his earlier works.

MORBID INHERITANCE IN AN ISOLATED RURAL COMMUNITY*

BY

J. W. McFEETERS, M.D.

It will be generally conceded that a rural community—particularly one which is isolated by reason of its geographical position or by the deliberate choice of its inhabitants, or both—is the ideal locality in which to study the familial incidence of bodily characteristics and morbid processes. Here family trees may be traced for generations, as they can never be in cities, where so often all trace of relatives is lost, and where the population is so constantly shifting. Here, too, with a certain degree of inbreeding necessarily imposed on the inhabitants for generations past—indeed, for centuries—one is bound to come across rare recessive characters, much less likely to occur in communities where random mating is the rule rather than the exception.

For several years I have traced out family trees systematically throughout a village which has a population of about fifteen hundred and collected data concerning numerous morbid conditions. My investigations led me to the conclusion that heredity plays an even more important part in many varied conditions than is generally recognized; and it may be suggested that a careful tracing out of family trees of various patients by observers in different parts of the country might lead to the acquisition of much valuable and helpful information. It would be particularly helpful to have such systematic investigation carried out with special care in isolated rural areas, as the chances of occurrence of recessive traits are much higher in such places. Each year that passes gives greater facilities for travel and so lessens isolation. It would therefore be desirable to study this subject closely before random mating becomes more easy for dwellers in remote country districts.

From my original essay I chose eight of the many conditions studied—namely, hereditary cerebellar ataxia, progressive muscular dystrophy, the lymphatic diathesis, otitis media, hernia, cancer of the bowel, rodent ulcer, and hydramnios—giving pedigrees of representative families, together with detailed medical histories where of interest. A condensed report such as I have had to prepare here necessitates a ruthless cutting down of the material; so I shall omit the medical histories, except in one or two cases, and deal only with the more important points arising in the study. Of the fourteen pedigrees originally presented three of the most interesting are here shown.

Hereditary Cerebellar Ataxia

In the family reported in my original essay twenty-one members had developed hereditary cerebellar ataxia in four generations. The members of the last two generations shown in the genealogical tree are still too young to reveal signs of the disease. The genealogical tree is unfortunately too large to reproduce here, and it is also impossible to give details of the medical histories of affected members.

One interesting point about the condition is that in several cases the symptoms first developed in a limb which had previously been injured. In one case the ataxia began in an arm which had been damaged in the war; in another in a leg which had been broken a short time before. The condition is a dominant one. Thus a member who died of pneumonia at the age of 30—several years before the average age of onset of the disease—nevertheless transmitted the condition to two daughters.

Five of the six children—all daughters—of an affected mother, who died in 1935, have a very pronounced strabismus. These five, whose ages range from 27 to 19, had "fits" in infancy. No member of any of the earlier generations squinted, so far as can be ascertained, nor is there any relation on the father's side with strabismus. There may therefore be a connexion between the strabismus and the fits. The occurrence of these fits—though convulsive disorders in infancy are of course not uncommon—in five of the six children of a mother suffering from a hereditary nervous disease appears to have some significance, and it would be interesting to see at a later date if these five girls developed the ataxic condition. I cannot discover whether any of the affected members in the previous generations had convulsions in infancy, or any nervous trait prior to the onset of the actual ailment.

Progressive Muscular Dystrophy

From a careful reading of the available literature on the subject it appears that the muscular dystrophies form a very motley group of conditions, both as regards the muscles affected, the course of the disease, and the type of inheritance. The work of many observers shows that muscular dystrophy may be inherited as a dominant (Landouzy-Dejerine facio-scapulo-humeral type), a recessive (pseudo-hypertrophic type), or a sex-linked recessive trait, as in the present series of cases.

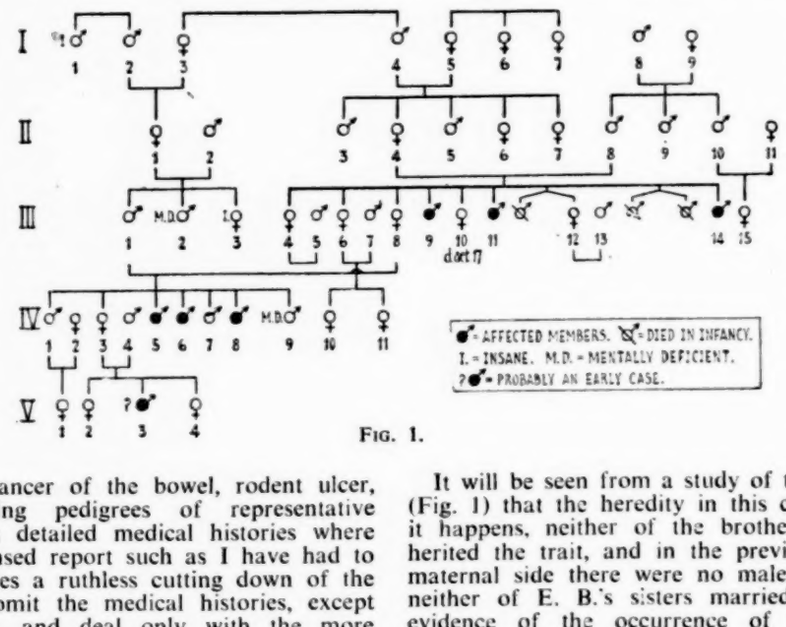

FIG. 1.

It will be seen from a study of the pedigree here given (Fig. 1) that the heredity in this case is sex-linked. As it happens, neither of the brothers of E. B. (II 4) inherited the trait, and in the previous generation on the maternal side there were no males in the family, while neither of E. B.'s sisters married. Thus there is no evidence of the occurrence of the disease prior to generation III, here shown, nor in any other branch of the family than that given here; but the sex-linked nature of the inheritance is clearly to be seen, as it is transmitted by the apparently healthy females in three generations, and contracted by the male members of the family.

The parents, E. B. (II 4) and A. B. (II 8), of the first affected cases were not related in any way, the mother coming from the village thirty miles away where her daughter, M. C. (III 8), now lives. Their two elder sons, R. B. (III 9) and A. B. (III 11), developed the disease at about 14 years of age, and both died at the age of 26. The youngest son, A. B. (III 14), did not show signs of muscular dystrophy till the age of 19, but died of

* A synopsis of the essay awarded the Sir Charles Hastings Clinical Prize, 1937, by the Council of the British Medical Association.

pneumonia at 22. M. C. (III 8), sister of these young men, has had three affected sons, in all of whom the disease developed at about 7 years of age. W. C. (IV 5) died in 1926, aged 14, and R. C. (IV 6) in 1929, aged 15. J. C. (IV 8), who is now 18, is still alive, but has very marked contractures of the legs. The only sister in this family, I. N. (IV 3), has a boy of 5, C. N. (V 3), who for some months has shown pronounced lordosis and waddling gait, and who finds it difficult to rise to an erect position after picking up an object from the ground.

Several interesting points arise from a study of the pedigree:

1. The importance of family history in any condition involving loss of power in the limbs. All six cases in generations III and IV have been diagnosed as tuberculous spine, whereas a study of the family history should suggest at least a possibility of one of the familial complaints.

2. Opinion is strongly opposed to the theory of "anticipation" or "antedating" in familial and hereditary diseases. The history of these cases, however, is rather suggestive of something of the sort. In generation III the disease did not develop till about 14 years of age or after, while in generation IV it began at 7 years of age or thereabouts. If the lordosis and waddling gait in V 3 should prove to be the first signs of the condition, we have here an even earlier onset—4 years of age.

3. The most interesting fact of all is that in three cases at least—R. B. (III 9), A. B. (III 11), and W. C. (IV 5)—there is a definite history of failure to bleed when cut, this history being confirmed by several relatives. It is worth considering whether the morbid process here might perhaps be primarily in the vascular system, some peculiarity in the capillaries leading to diminished blood supply to either nerve or muscle tissue, so causing loss of tissue and loss of function. This is a matter rather for the biochemical expert and the neurologist, who might perhaps arrive at some solution of the problem presented by the disease.

I can find no reference to this peculiarity in any reports studied, though Hurwitz (1936) gives extensive blood-chemical investigations in all his cases.

The Lymphatic Diathesis

The so-called lymphatic diathesis is generally admitted to be a hereditary character, but possibly the dominant nature of the hereditary element is not sufficiently recognized. The family trees of all patients in the community found to have unhealthy tonsils have been traced and the conclusion arrived at that the heredity is a dominant one. In one particular family a tendency to enlarged and unhealthy tonsils has been passed down through four successive generations, in each affected sibship the condition appearing in at least one-half of the sibs. In the case of an unaffected member of the second filial generation, however, the three generations following are apparently clear of the condition, though environmental conditions are similar in all branches of the family. It is probable that if family pedigrees were carefully worked out by a large number of observers it would be found that heredity plays the principal part in the production of tonsillitis.

Otitis Media

A study of several family trees has shown that there is a very strong hereditary (dominant) element in otitis media. Stein (1918), indeed, holds that the predisposition to aural infection is more important than the actual infection itself, and suggests that constitutionally susceptible individuals will be likely to fall easy victims to such infection, whether it succeeds tonsillitis, measles, whooping-cough, scarlet fever, or other infection.

In two families in which otitis media is found as an obviously dominant trait it is interesting to note that there is no coexisting tendency to tonsillar infection. It appears, indeed, as if tonsillitis and otitis media may be—and in the families studied by me actually are—inherited as entirely separate entities. It is obvious, therefore, that, in view of the dominant type of heredity in otitis media, it would be worth while to pay particular attention to the ears in families where this condition occurs, especially in cases of children suffering from catarrhal infections and the exanthemata.

Hernia

In spite of the fact that in an agricultural community the majority of the males and a considerable proportion of the females are farm workers, who necessarily undergo heavy manual labour, the proportion of persons with hernia, either inguinal or femoral, is quite small. I have made very exhaustive research into the incidence of this condition, and have been able to discover not more than twenty cases, of which about half are females. This shows an unusually high percentage of females; but possibly the heavy work undertaken by many of the women may provide the exciting cause of the rupture—less common in women unused to manual work.

On investigating the cases closely a most striking fact at once came to light. Fifteen of the twenty cases occurred in two families, in one of which there was a very high proportion of cases of bilateral hernia. Furthermore, in two instances there was a mating of two affected individuals; in one instance five of the six children being affected, two bilaterally, while the one living child of the other union has a double inguinal hernia. The high incidence of hernia in these two families, when contrasted with the low incidence in the rest of the village, suggests a very strong hereditary (dominant) element in the aetiology of the condition—playing, in fact, an even more important part than that played by direct violence or strain.

Cancer of the Bowel

Cancer of the colon is the one form of malignant disease that is common in this locality, and all the cases which I have been able to trace in the last two generations have occurred in four families, with the exception of one case in which no relatives are known to have died from this cause. Joll (1933) asserts that susceptibility to cancer may be definitely hereditary, and states that polyposis of the colon, which may, and often does, lead to cancer, is inherited as a Mendelian dominant. Piney (1934) suggests that carcinoma coli may be really only a further stage in the development of intestinal polyposis.

From the high proportion of affected members in three of the four families affected it would certainly appear as if the condition were dominant; in the fourth family, however, there seems to be a recessive heredity, if indeed any hereditary element is present. It is certainly possible that polyposis of the colon might be found as a hereditary or familial trait in all four families.

Rodent Ulcer

A very striking feature in the list of pathological traits noted in the community is the high incidence of rodent ulcer. In this comparatively small village nine cases have been seen in seven years and histories of several others elicited by inquiry. No environmental causal element can be discovered, nor can any definite hereditary character be found except in one family, shown in Fig. 2.

The occurrence of this striking pedigree of rodent ulcer is at least highly suggestive of a familial element in the aetiology of the complaint. The geographical isolation of the village increasing the tendency for recessive traits to appear, apparently spontaneously, the possibility is that family histories of rodent ulcer might also be discovered in the remaining cases if one were able to go back a couple of generations. The condition being one of later

life, however, it is difficult to trace the family histories back with any degree of accuracy, except in the one case given, as most of the parents of affected individuals have long since died.

An interesting point about the family shown in Fig. 2 is the singling out of the ear by this malignant process in four cases. None of the other six patients with rodent ulcer seen by me in this village had the ear affected. In two cases the ulcer was at the inner canthus of the eye, in one beside the nose, in two on the cheek, and in one on the chin. So far as can be ascertained, no cases of rodent ulcer occurred in any of the sibs of A. F. (I 2) or in any member of the previous generation.

It is possible, therefore, that a tendency to rodent ulcer may depend on a familial character which requires in addition some conjunction of external exciting causes to

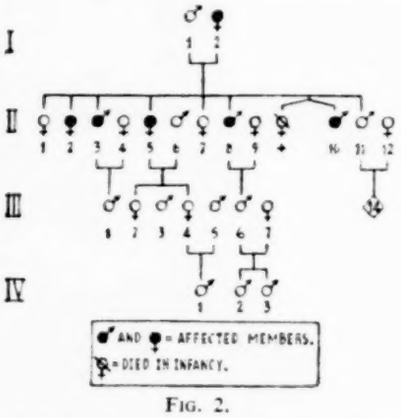

FIG. 2.

call it into being. In other words, it may be merely a predisposition to rodent ulcer that is transmitted. Or, what is more likely, it may be that the condition is inherited as a simple recessive, and so remains dormant until two heterozygous carriers of the condition mate, in which case it will appear in a certain proportion of their children. If the mother, M. F. (I 2), were a homozygous recessive and the father, W. F. (I 1), a heterozygous carrier, it would account for the high percentage of children affected.

I can discover no reference in current medical literature to any definite hereditary element in the aetiology of rodent ulcer; but it may be that this is because no attempt has previously been made to trace out pedigrees of this condition in a locality which is geographically isolated, and in which, therefore, recessive characters are most likely to be traced.

Hydramnios

Hydramnios is another condition to the inheritance of which I can find no reference in medical literature; but this may be partly explicable by the fact that this abnormality is associated with a high percentage of stillbirths. One is so apt to associate the terms "hereditary" and "familial" with characters transmitted from parent to child that one forgets the possibility that a malformation affecting a stillborn child may be transmissible from one generation to another. This is emphasized by Baur, Fischer, and Lenz (1931) with regard to anencephaly, which they regard as a familial condition.

The pedigree here given (Fig. 3) is so striking that there must be more than coincidence at work in the production of the cases of hydramnios; and there is at least a strong suggestion of familial tendency. The first case which came to my notice was that of Mrs. R. W. (II 3), to whom I was called by the district nurse in June, 1931, on account of "rapidly increasing size of uterus." On examination the patient was found to have acute hydramnios, the condition having arisen within about forty-eight hours. She was sent into hospital, where labour was induced, resulting in the birth of a baby, which survived three hours. At necropsy a patent ductus arteriosus was found. The mother has not since become pregnant.

Her sister-in-law, Mrs. B. W. (II 5), was seen by me early in 1933, and on account of difficulty in making out foetal heart sounds or foetal parts I referred her to hospital. There she was examined radiographically, and was found to have an anencephalic foetus—another of the abnormalities often associated with hydramnios. She was sent home, being told to report to hospital again in a month's time (that is, shortly before term). The rough journey down Fen roads, however, brought on labour, and she was delivered at home of an anencephalic child, stillborn.

A neighbour who was present in the room along with the district nurse and myself had also been present at the birth of the child marked II 1 in Fig. 3, the first-born

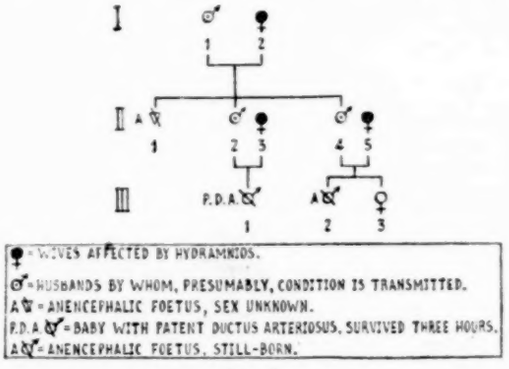

FIG. 3.

child of the patient's mother-in-law, Mrs. F. W. (I 2). When she saw the baby she remarked that B. W.'s mother had also had "a lot of water and a baby like a frog." This information was entirely unsolicited, and was given so spontaneously on the first sight of the child as to make it certain that II 1 was also anencephalic and that Mrs. F. W. (I 2) had also had hydramnios.

An interesting point about this pedigree is that in each case the mother was a primigravida, whereas the general rule is that in 75 per cent. of cases of hydramnios the mother is a multipara (Ten Teachers, 1922). Another interesting point is that the relationship of the cases is on the paternal, not on the maternal, side. None of the sibs of the three women in question have had a case of hydramnios in their families. It has been suggested by Davenport (1920), in a study of 644 births in families where twins had occurred, that there was a greater tendency for twins to occur among the sibs of the father than of the mother of twins. If this is correct it is equally possible that the paternal element in the production of hydramnios may be an essential feature—a possibility which does not appear to have been suggested up to the present. It is within the bounds of possibility also that the causal element in this condition may be a zygotic lethal factor. Gates (1934) states that, while the evidence for the occurrence of such factors in man is not convincing, there is good reason to believe that they do occur, and that they are perhaps at the root of some miscarriages and monstrosities of various kinds.

REFERENCES

Baur, E., Fischer, E., and Lenz, F. (1931). *Human Heredity*, London.
Davenport, C. B. (1920). *Amer. Naturalist*, **54**, 122.
Gates, R. Ruggles (1934). *The Chances of Morbid Inheritance*, London.
Hurwitz, S. (1936). *Arch. Neur. Psychiat.*, **36**, 1294.
Joll, C. A. (1933). *Bristol med.-chir. J.*, **50**, 201.
Piney, A. (1934). *The Chances of Morbid Inheritance*, London.
Stein, C. (1918). *Z. Ohrenheilk.*, **76**, 66.
Ten Teachers (1922). *Diseases of Women*, London.

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THE HISTORY OF BACTERIOLOGY

The science of microbiology is fortunate in possessing a scholar in Professor William Bulloch with the inclination, the long memory, and the capacity for far-reaching literary research which have enabled him to write the story of its development. His *History of Bacteriology*[1] is a scientific and literary achievement of the first order, illuminating to the bacteriologist himself and fascinating reading for anyone. That such a book should not have been written before is surprising. Löffler attempted it and published one volume, promising a second in 1887. As Professor Bulloch drily remarks: "That is more than half a century ago, but the complete book has not yet appeared, and will not appear, because its author has been dead nearly a quarter of a century." To begin this task it was necessary to study writings and to try to penetrate minds much further back in history than this, for the idea of the microbic origin of disease first found expression centuries ago, and nothing here revealed is more remarkable than the prophetic speculations of these far-distant original thinkers. It is here, and among the earliest actual observers of bacteria, that the author performs his greatest service by rescuing much of interest from what might have remained in eternal oblivion; the nearer he comes to the present day the more crowded is the picture and the less the need for historical record.

Among the great figures that stand out in this record Leeuwenhoek's is unique; that a man should have made a detailed study of the flora of the human mouth in 1683 is well-nigh incredible, but his description is such that the species of whose shape and movements he writes so graphically can be identified with confidence. It was not until nearly two hundred years later that the real era of discovery began on which much of modern medicine is founded, and this period is dominated by the figures of Robert Koch and Louis Pasteur. The former and his large band of associates discovered the majority of the main pathogenic bacteria we recognize to-day. Pasteur, whose achievements had begun earlier in exploding the myth of spontaneous generation, laid the foundations of specific immunization and indeed perfected methods for this purpose on which the next fifty years could do little to improve. This country cannot claim any pioneer the equal of these, but we are not perhaps as proud as we should be of Tyndall, whose determination in the face of baffling contradictions enabled him to establish the heat-resistant property of spores, or of Ogston, whose work on the pyogenic cocci had a precision and clarity which at that time were something new. There is another type of figure in Professor Bulloch's pages: the bigoted enemy of new ideas, who in appearing to obstruct the advance of science served also to sharpen the wits of his opponent and forced him to perfect his technique beyond the reach of adverse criticism. This country is well represented here by the astonishing record of Charlton Bastian, who continued to maintain his belief in the doctrine of spontaneous generation almost until his death in 1915.

The modern microbiologist, and indeed any investigator in the field of medicine, should find inspiration in this account of how a new science was made out of nothing. Armed with the knowledge and technical resources of the present day, and perhaps supported by some of the immense funds now available for research, he may well compare his own efforts, much to their disadvantage, with those of these pioneers, whose minds had to pierce utter darkness and avoid many easy pitfalls to arrive at the truth. Undoubtedly progress in microbiology has slowed down with the increasing complexity of the subject, and this is perhaps only to be expected. But would it not still be possible for a master mind to cut across a mass of apparently unconnected modern detail with a new and revolutionary idea? Just as it is interesting to speculate on what would happen if Marlborough or Napoleon were in charge of a modern army at war, so is one tempted to speculate on the results of reincarnating such a man as Pasteur and giving him a free hand in a modern laboratory. The story Professor Bulloch has to tell is an inspiration in another sense. The development of medicine as a science is due more to the study of bacteria than to anything else. The only approach to the true comprehension of disease is the aetiological, and in this bacteriology plays a part of fundamental importance. That treatment has become more specific and less empirical is another outcome of the great advances made in the study of bacteria, while almost the whole of preventive medicine hinges on the same subject. All this has been done in little more than fifty years, and we can surely not be deceived in believing that this is a remarkable time in which to have lived.

[1] *The History of Bacteriology*. By William Bulloch, M.D., F.R.S. London: Oxford University Press. (10s. 6d.)

PRACTICAL PROBLEMS OF LACTATION

Our correspondence columns in recent weeks have borne testimony to the wide interest which is felt by medical men and women in the subject of the breast-feeding of infants, and the general concern at the prospect that we are confronted with a serious decline in the ability or the willingness of English mothers to nurse their babies. The appearance of Dr. Harold Waller's monograph entitled *Clinical Studies in Lactation*[1] is undoubtedly opportune, but its outstanding merit is the presentation of a valuable piece of clinical research, which would at any time obtain for it a cordial welcome. The author has for many years been a serious student of the problems associated with the feeding of infants as they arise in the industrial population of the east and south-east of London, and he now presents us not with a statistical record of his experience but with a discussion of the physiological, psychological, and pathological difficulties with which he has had to do battle. In deploring the prevalent ignorance on the subject of breast-feeding he is clearly entitled to point out that a grave responsibility rests upon teachers of obstetrics, who, being directly concerned with the early stages of this important function, have continuously neglected its systematic study. Dr. Waller's discussion of his problems is marked by a complete sincerity; for some of them he has found solutions which satisfy him; others have defeated him, and he does not hesitate to say so. Upon some not unimportant points the co-operation of a pathologist would have been useful—for example, in regard to the bacteriology of the breast secretions in cases of mastitis—but his opportunities seem to have been strictly confined to clinical observation.

Considerable space is devoted to the difficulties which attend the proper establishment of lactation in the first two to three weeks of the puerperium, particularly in a primipara. In the author's view these difficulties are referable as a rule to a single cause—namely, faults in the normal mechanism of outflow. These in turn may be in part due to hypotrophic conditions or malformations of the nipple or to developmental defects of the ducts, and the author expresses his regret that he has been unable to find any record of the study, by means of injections, of the lacteal ducts and sinuses. The reader may perhaps wonder why Dr. Waller did not repair this omission himself. The general impression gathered is that many a primipara, left to herself, would have but a poor chance of bringing this essential natural function into effective action. Preparatory treatment of the breasts is advisable, and also much skilled attention during the earliest stages of activity. The question naturally arises: Why has a function which is of prime importance to the continuance of the species lapsed to the extent of requiring so much artificial aid for its establishment? There is apparently no answer to this question, but its biological significance cannot be overlooked.

In its clinical aspects the author's view is that the initial difficulty is in nearly all cases due to "engorgement," which he defines as active functioning against obstruction to outflow. From this point he develops his thesis that there exists an intramammary mechanism which can produce outflow independently of suction, compression, or other external stimulus. The clinical observations upon which this thesis rests are of great interest and are carefully and fully recorded. The mechanism of lactation is a reflex which should become "conditioned" when the function is fully established, but both time and supervision are necessary in the early stages for its effective working. This section contains many valuable hints as to the best methods of dealing with engorged breasts. They are not those generally taught; indeed, the author has some scornful things to say about the instruction of the average midwife in breast management, but in his hands the methods he advocates have proved reliable. The sections dealing with mastitis may be regarded as of especial value. The frequency with which mastitis occurs in institutions is rightly deplored, and the author unhesitatingly lays the blame upon the ill-advised methods of breast-feeding which are generally taught and practised. His experience leads him to believe that in only about 25 per cent. of the nursing mothers who leave hospital is lactation properly functioning, yet the prophylaxis of mastitis consists essentially in the early establishment of free outflow from the glands. Without free outflow the infant cannot feed easily and in comfort; when it encounters difficulties the risk of "cracked nipples" arises, and this condition is in turn a common precursor of infection. The occurrence of cracked nipples should always be regarded as a reproach, not to the infant for maltreating its mother but to the doctor and nurse for unskilful management. The last twenty-seven pages of the monograph are devoted to a postscript in which Dr. Waller allows himself to have his fling about a number of things. This digression may have relieved his feelings, but the clinical study of lactation is not advanced thereby.

[1] *Clinical Studies in Lactation*. By Harold Waller, M.B., B.Ch. London: William Heinemann (Medical Books). (7s. 6d.)

OTITIS MEDIA AND DEAFNESS

Many a schoolmaster and parent must have heaved a sigh of relief after the Lent term has passed without any severe dislocation of school routine from acute infections, especially those in which the brunt of the attack is on the upper respiratory tract. One of the ever-present risks of such infection is the spread of organisms to the middle ear along the Eustachian tube. As a complication of the infectious fevers, and as an event secondary to streptococcal infection of the throat, otitis media is one to be most dreaded, not only because of its immediate dangers, but also because of the more remote disability of permanent hardness of hearing. Of its frequency as a complication in childhood there can be no doubt. Dr. J. H. Ebbs,[1] for example, in a post-mortem examination of 880 children who had died from various diseases, four-fifths of whom were under 2 years of age, found pus in one or both ears in 52.8 per cent. In view of the gravity of the condition in childhood it is evident that every preventive measure should be encouraged, and in this connexion we might refer to the importance of segregating the adult with "a cold" or influenza from children living in the same house. With children of school age the school medical officer is by the nature of things more apt to discover the "chronic ear," and in detecting this the value of routine inspection with the electric otoscope, recommended by the chief medical officer of the Board of Education in his report for 1934, was made quite clear in these columns by Dr. F. J. Lishman.[2] Apart from measures for preventing middle-ear infection, the next most important step is to detect the acute stage at the earliest possible moment, for in the correct treatment of this lies the hope of preventing immediate disasters and chronic otorrhoea. Disease of the middle ear is probably the cause of 90 per cent. of the cases of acquired incomplete deafness in children, and between them streptococci and pneumococci account for nearly all middle-ear infections. In view of their predominance as the causative agents in otitis media, Mr. F. J. Cleminson suggests in a letter in this issue (p. 242) that school medical officers during the current Lent term should keep a special look-out for signs and symptoms of acute otitis media and institute immediate chemotherapeutic attack. Although in chemotherapy the ideal procedure is to identify the organism first, practical considerations and the time factor support his recommendation that a sulphonamide compound should be administered as soon as a clinical diagnosis has been made. Fortunately we have in M & B 693 a compound which is effective against pneumococci as well as against streptococci, and Mr. Cleminson suggests that the school medical officer should consider giving this to all cases. "Probably," he writes, "the most suitable moment would be at the onset of an earache," but where this complaint was at all vague the medical man would probably also prefer to have the objective evidence afforded by the appearance of the drum. This seems to be rational therapeutics and sound preventive medicine, and we would therefore support Mr. Cleminson's request that school medical officers should send in to him at the end of the term notes of cases of otitis treated in this way. Bacteriological data, when obtainable, would add to the value of such information, the points of interest being the nature of the primary infection in the throat, and particularly that of any case of suppurative otitis media developing in spite of treatment.

[1] *British Medical Journal*, 1937, **1**, 1084.
[2] Ibid., 1937, **2**, 1165.

ACETANILIDE POISONING

Acetanilide was introduced as an antipyretic in 1886. By 1890 twenty-three cases of acute poisoning had been observed, a few of which had proved fatal. Four hundred American physicians replying to a questionary in 1907 gave records of 840 cases of acute acetanilide poisoning with twenty-eight deaths, and described in addition 136 cases of chronic abuse of this drug. Lundsteen, Meulengracht, and Rischel[1] have recently studied in Copenhagen eleven cases of chronic abuse of acetanilide. Cyanosis was the most striking sign, and analysis of the blood showed that this was due chiefly to coloured derivatives of para-aminophenol, only relatively small amounts of methaemoglobin being present. In 1926 Young and Wilson[2] proved experimentally that the changed colour of the blood in acute acetanilide poisoning was caused by these coloured derivatives of para-aminophenol, and they were actually unable to find any methaemoglobin though they noted the presence of some sulphaemoglobin. The cyanosis which may follow the administration of sulphonamide also results quite often not from methaemoglobin but from coloured products derived from the drug itself. The continued abuse of acetanilide brings about a peculiar and strong addiction which is not relieved by other antipyretics. Fatigue, headache, anaemia, and loss of weight follow, and, since the fatigue and headache are temporarily relieved by the drug, a vicious circle is established. It should be remembered, too, that acetanilide addicts—like other drug addicts—will resort to all kinds of tricks to obtain supplies. The authors point out that at present in Denmark any prescription for mixed powders containing acetanilide holds good for five years, during which time the same prescription can be repeated as often as may be desired. They suggest that some change in the present practice might well be made.

[1] *Acta med. scand.*, 1938, **96**, 462.
[2] *J. Pharm. exp. Therap.*, 1926, **27**, 133.

ARTERIOVENOUS ANEURYSMS

There are few more fascinating abnormalities than arteriovenous aneurysm. Often arising in dramatic circumstances, and producing a remarkable array of physical signs, it offers most unusual opportunities for the elucidation of simple circulatory problems and for the exercise of surgical judgment and skill. Most cases are traumatic in origin and the condition is not so common in this country as in the U.S.A., where shooting at human targets seems to be a more popular pastime than here. Ten cases have recently been described in detail by Reid and McGuire[3]; in four of these the main artery of the upper limb was involved and in three of the lower limb, while the external

[3] *Ann. Surg.*, 1938, **108**, 643.

carotid, occipital, and orbital arteries were each concerned in one case. Not all cases of arteriovenous fistula are traumatic, and discussing Reid and McGuire's paper Lehman[4] gives an account of a man of 37 with syphilis who had a fistulous communication between the abdominal aorta and inferior vena cava. The diagnosis was made on a pulsating abdominal tumour with a continuous thrill and murmur accentuated in systole, an enlargement of the veins of the abdominal wall and thigh, and a high pulse pressure. At operation the aortic aneurysm was found to be on the point of rupture into the abdomen and to be surrounded by densely inflamed tissues. In spite of ligating the aorta and vena cava above and below the sac, the latter began to leak and could only be controlled by packing. The patient died next day. The diagnosis of arteriovenous fistula can usually be made simply from the presence of a pulsating tumour carrying a thrill and a bruit and disappearing on proximal compression of the main artery. Less simple are the problems of how certain functional changes arise in association with this condition. The obvious result of short-circuiting the main current of blood to a limb would be to reduce the supply to the periphery; symptoms of ischaemia are, however, rare, occurring only once in the present series and then only after an abortive attempt to cure a popliteal aneurysm by proximal ligature of the artery. On the contrary, the affected limb seems sometimes to be more vascular, since in young subjects it may grow to a greater size than its fellow. In three of Reid and McGuire's cases peripheral nerve palsies, apparently due to pressure of the aneurysmal sac or of the enlarged veins on the adjacent nerves, were cured by excision of the fistula. The most remarkable change associated with arteriovenous aneurysm of large vessels such as the femoral is enlargement of the heart or, occasionally, heart failure. An interesting example is recorded by Reid and McGuire: A man of 30 with a large arteriovenous fistula of the femoral vessels following a gunshot wound fifteen years previously was admitted with gross enlargement of the heart and severe congestive heart failure which did not respond to rest. Excision of the fistula led to rapid disappearance of the failure and ultimately to a return of the heart to normal size. No one is yet agreed as to what causes the enlargement. Lewis and Drury[5] in 1923 noted that in their cases of arteriovenous fistulae with cardiac enlargement the general venous pressure was normal and was not affected by temporary compression of the fistula. On the basis of this and of other evidence they concluded that an increased cardiac output had not occurred and could not therefore be held responsible for the enlarged heart, which they attributed to deficient coronary flow consequent on the very low diastolic arterial pressure associated with the fistula. Harrison, Dock, and Holman,[6] on the other hand, found increases of about 100 per cent. in the cardiac output of dogs developing cardiac enlargement as a result of experimental arteriovenous fistula. It seems probable, as Lewis and Drury recognized, that the cardiac output may be increased when the arteriovenous leak is big enough, but their evidence of a normal venous pressure in human cases which have not progressed to the stage of heart failure is entirely supported by Reid and McGuire's experience. The only effective treatment for arteriovenous fistula is surgical, and it is essential for success that the arteriovenous opening should disappear. The best way of achieving this seems to be extirpation of both artery and vein at the site of the fistula, with ligature of all the arterial and venous connexions of the sac. If for technical reasons extirpation is impossible, then ligation and division of as many as possible of the vessels joining the sac and transfixion of the fistulous opening with braided silk ligatures are usually effective. The operation to be avoided at all costs is simple proximal ligation of the artery, since this is often followed by gangrene of the limb.

[4] *Ann Surg.*, 1938, **108**, 694.
[5] *Heart*, 1923, **10**, 301.
[6] Ibid., 1924, **11**, 336.

ASTHMA RESEARCH

The Asthma Research Council reports another year of steady work in its various clinics and laboratories.[1] The Guy's Hospital asthma research clinic has for some time past been studying small but carefully selected groups of patients. The results of general treatment without specific treatment have proved at least as good as the results of general treatment combined with desensitization to inhalant proteins, and better than those obtained from desensitization alone. Preliminary work does not lead the staff of the clinic to expect any dramatic confirmation of the value of vaccines. Secondly, they have had further clear evidence of the importance of the psychological factor in the effects of treating rhinorrhoea with normal saline only. Out of thirty-two patients thirteen were cured or much improved, six showed some improvement, and thirteen none—better figures than those obtained in 1936 with a solution of mixed inhalant proteins. This year they intend to investigate the results of pollen desensitization in hay fever. Reviewing the last five years' work, they find themselves forced to conclude that protein desensitization and vaccine therapy have not been successful enough; they propose, however, to see if methods can be improved. Dr. W. A. Mann is investigating skin tests in the hope of finding out whether there is a correlation between skin sensitivity and clinical sensitization. He will try to produce attacks of asthma by the use of allergens to which the patient's skin is sensitive. The clinic staff also propose to study in greater detail the non-allergic factors which may determine the individual attack of asthma. The workers at St. Mary's Hospital are increasingly adopting the principle of self-inoculation for hay fever, and last year issued 403 sets for home desensitization. "Rush" courses have also been successful. Both these methods, however, are either tedious or troublesome, and Dr. David Harley is working to simplify desensitization by improving the antigen. The King's College Hospital clinic reports excellent clinical results from extracts of

[1] Copies of the report free from Asthma Research Council, c/o King's College, Strand, London, W.C.2.

mixed pollens. Short-wave currents have been found at St. Thomas's to clear up chronic rhinorrhoea, the best results being obtained in combination with breathing exercises. A clinic meeting one day a week has been started at Manchester Royal Infirmary in co-operation with the appropriate subdepartments. Funds are needed for a research worker. At King's College, London, Dr. G. E. Malcomson and Mr. I. McWhan have continued their study of the anti-anaphylactic action of certain dyes in the intact animal as opposed to isolated organs. No certain effect has been found so far. On the other hand they have confirmed the anti-anaphylactic action of certain narcotics. At St. Bartholomew's Hospital Medical College Dr. J. D'Silva has continued his studies on the effect of adrenaline on the blood potassium. Since October, 1937, the research workers and members of the Research Council Advisory Committee have published ten papers in various periodicals. The Asthma Research Council therefore shows substantial progress, and its policy of using its funds to pay grants to qualified research workers is amply justified.

ALLERGY TO INSULIN

With early preparations of insulin a considerable proportion of patients developed inflammatory reactions, many of which could be prevented by changing the make of insulin—say, from pig to beef insulin. As preparations of insulin became increasingly purified from other proteins the number of local reactions became less. But there have been, and still are, some 10 to 15 per cent. of patients who have local inflammatory reactions. In a typical case of this kind large local inflammatory reactions appear after seven to ten days of injections; these swellings persist for another two to three weeks and then disappear completely. Such reactions are found with equal frequency with all brands of ordinary soluble insulin and with the new zinc-protamine-insulin. They rarely persist for more than a month. These patients apparently develop a local allergic reaction to insulin of any kind and gradually get over this phase by becoming desensitized again. Such reactions are more common in women than in men. Unfortunately a few diabetics react severely to insulin and develop pronounced local or generalized urticaria, or even still more serious anaphylactic symptoms such as joint pains and profound collapse; these are relieved by adrenaline in the usual way. Such a state may follow the first dose of insulin, but is more common and severe, as one might expect, when insulin has had to be re-started after a period of omission. It is quite clear on clinical grounds that insulin preparations have antigenic properties, and the exact nature of this has been carefully investigated by several laboratory workers, the most important and exact contribution being by Lewis.[1] Using the uterus of the virgin guinea-pig with the Schultz-Dale technique, he tested animals sensitized to beef and pig insulin against these insulins and also with extracts of beef and pork muscle and pancreas. His results clearly demonstrate that the insulin protein molecule is itself an active antigen. Since it does not react with pancreas protein, its specificity is independent of the other protein constituents of the pancreas. He also shows that insulin protein is without species specificity, and that insulins from different animal sources are closely related immunologically. Bernstein[2] has recently obtained similar results by producing allergic shock in guinea-pigs. The condition of severe allergy to insulin is very serious for diabetics who would die without insulin. Fortunately the condition is exceedingly rare, but every now and again cases are reported in the literature, mostly from America. Fortunately they can usually be desensitized by beginning with minute doses subcutaneously (say, 1/250 unit) and working up the dose progressively until desensitization is achieved and useful therapeutic doses can be tolerated. Graham has described such a case,[3] and Herold has lately recorded another example of successful desensitization.[4] Probably the condition is more frequent than the literature suggests. The addition of 1 or 2 minims of adrenaline to the insulin seems to allow the toleration to insulin to be more quickly re-established. Some of these patients have a history of sensitivity to other protein molecules, as shown by previous asthma, urticaria, and so on. But this is absent in others who seem to be specifically sensitive to the insulin molecule alone.

[1] *J. Amer. med. Ass.*, 1937, **108**, 1336.

THE TEACHING OF PSYCHIATRY

The resolutions of the General Medical Council with regard to professional education which came into operation in November last include those relating to the teaching of psychology during the first two years of medical study and to instruction in psychology and mental disorder and deficiency during the clinical years. Certain difficulties incidental to such instruction, especially in relation to practical clinical experience of the psychoneuroses, are recognized. There are some teachers who declare these to be so formidable during the period of undergraduate study that they are loth to attempt what others are doing with a reasonable amount of success. Somewhat belatedly comes a report of the proceedings of the fourth conference on psychiatric education (undergraduate instruction), held at Baltimore in April, 1936.[5] It is a full report and contains much that may be of value in this connexion, much of practical value as resulting from actual experience. The details of the four-year course at the Johns Hopkins University School of Medicine are set out and discussed, and those at a large number of other schools are brought under review, with special reference to the simplification of the teaching. The experience of these American schools throws much light on the difficulties encountered and upon several methods of overcoming them. Advantage should be taken of this by schools and teachers in Great Britain and the Dominions. In the matter of nomenclature, also, the report contains

[2] *J. Lab. clin. Med.*, 1938, **23**, 938.
[3] *Lancet*, 1928, **1**, 601.
[4] *New Orleans med. surg. J.*, 1938, **91**, 163.
[5] *Proceedings of the Fourth Conference on Psychiatric Education. Undergraduate Instruction. Baltimore, Maryland, April 8–10, 1936.* New York: The National Committee for Mental Hygiene. 1938.

some suggestions worthy of note: perhaps the terms "psychobiology" and "psychopathology" as used by Professor Ziegler are the most striking.

NASAL TEETH

Under pathological conditions teeth may grow in unexpected and inconvenient places. In 1797 the poet Goethe appears to have been the first to record the presence of heterotopic teeth in the nose, and 135 years later 100 cases were reported in the literature (A. Kramer, 1932). While there is no satisfactory explanation for their origin, hereditary influences seem to play a part in their production, and it has been calculated that the incidence of nasal teeth in people with supernumerary teeth as compared with their incidence in those possessing none is at least 100:1. The majority of nasal teeth are maxillary first incisors, and it is unusual to find more than one. Among the symptoms to which they give rise are unilateral obstruction to breathing, chronic and often foul nasal discharge, localized ulceration and crusting, and presumably, by reflex irritation, asthmatic attacks, laryngospasm, and epileptiform seizures. The diagnosis, usually simple, may be missed altogether when the tooth is almost completely embedded in the nasal mucous membrane and is situated on the nasal floor near the vestibule. Its slight mobility when tested with a probe differentiates it from immovable exostoses and odontomes and from freely movable foreign bodies and bony sequestra. Diagnosis is made certain by an *x*-ray, and treatment is always surgical removal, which is invariably followed by complete cessation of symptoms. These puzzling and troublesome abnormalities are carefully discussed in the December, 1938, number of the *Archives of Otolaryngology* by William J. Hitschler of Philadelphia, who adds a concise bibliography and reports an additional case.

SWEDEN'S PLAN FOR A STATE INSTITUTE OF NATIONAL HEALTH

In 1936 the Swedish Government instructed certain authorities on different aspects of hygiene to study and report on the possibilities of creating a truly representative State Institute of National Health. This step reflected the growth of the conviction, on the part of all concerned with the health of the nation, that a grouping and, to a certain extent, a re-grouping of the health activities of the country in a co-ordinated and comprehensive scheme were necessary. It may at first sight seem paradoxical that Sweden, ahead of most civilized countries in social welfare and public health, should find it necessary to set her house still further in order. The plan recommended by the authorities consulted has now been published in the form of a 78-page report supplemented by architects' drawings. It is proposed that the three main activities of the new Institute shall concern (1) general hygiene, (2) occupational hygiene, and (3) dietetics and food control. In each of these three main spheres the Institute will conduct investigations and will serve as an adviser both to the authorities and to the general public. It must also give instruction in social welfare and medicine to doctors, nurses, and health inspectors, and must also organize health propaganda. A most important activity will be the health aspects of housing. Maternity and child welfare, the care of the tuberculous, medical statistics, and medical and social legislation will also be the concern of the Institute. It will further deal with the injuries and ailments resulting from faulty conditions of employment. The working conditions of young people and women, working hours, and the public health aspects of rationalization in industry will also be dealt with by the Institute. The control of the manufacture and sale of foodstuffs will be supplemented by certain educational activities with regard to the composition of household dietaries. All these and many other activities are to be conducted in one and the same block of buildings which will house the administrative staff, library, and museum. The architect's plans provide for some 170 rooms. It is calculated that the buildings will cost Kr. 1,800,000, and the furnishing about Kr. 400,000. The annual cost of salaries will be Kr. 240,000, and other expenses Kr. 110,000. It is not expected that the buildings will be completed at the earliest before some time in 1940.

NATIONAL NUTRITION CONFERENCE

The Council of the British Medical Association decided at its meeting on January 18 to call a national conference on nutrition in its wider aspects—that is, in relation to national, including agricultural, policy. The conference will last three days, the dates provisionally chosen being April 27, 28, and 29. The conference will be representative not only of medicine but of agricultural producers, home and oversea, as well as of industry and education. A large variety of interested bodies are being invited to send delegates. The conference will take as its starting-point the recognized food needs of the individual if health is to be maintained. It will go on to ask such questions as: How far are these needs satisfied in this country at the present time? What increases are required in the production of particular foodstuffs, either at home or in the Empire, to fill the gap? How can the necessary increases in consumption be best secured: through a system of family allowances, education, including propaganda, or otherwise? On April 28 a public meeting will be held at which the subjects dealt with at the conference will be discussed. The Association's active interest in nutrition goes back to 1933, when a special committee on the subject was appointed, under the chairmanship of Sir Kaye Le Fleming.

The King, accompanied by the Queen, will open the new Westminster Hospital on Thursday, April 20.

The commemoration of the fiftieth anniversary of the foundation of the Pasteur Institute of Paris has been postponed until March 15, when it will be presided over by the President of the French Republic.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

URETHRAL INSTRUMENTATION IN GENERAL PRACTICE

BY

H. P. WINSBURY-WHITE, F.R.C.S.

The Armamentarium

It is not necessarily an easy problem for the general practitioner to decide what the extent of his equipment in urethral instruments should be. In his anxiety to be equal to all occasions he is apt not only to encumber himself with a superfluous stock, but unless he has special knowledge of these matters he is quite likely to find that he has acquired some appliances which are more dangerous than useful.

In selecting gum-elastic instruments he should make a point of having the best, especially as with ordinary care these will last a long time. The bougies of this nature should be marked in the French scale, which is less abrupt than the English system. The simplest advice I can give on this matter is that he should make his purchases from a firm which takes a special interest in genito-urinary supplies. In indicating the details of the implements that a general practitioner should possess I feel it will be helpful to deal with this question from two different points of view: first, where he is in the country and at a considerable distance from specialist help; and, secondly, where he has specialist assistance within easy call. In the former circumstances he should be possessed of the following:

Gum-elastic bougies, sizes 4 to 30 Charrière (French scale; up to 18 English scale); as high as 8 F. these instruments should have corkscrew tips. Gum-elastic catheters, alternate sizes from 12 to 20 French scale (approximately 6 to 12 Eng.); sizes 16, 18, 20 F. (approximately 8, 10, 11 Eng.) with coudé tips, the smaller sizes with olive tips. A special wire stylet for introducing the coudé catheters on certain occasions. One each of sizes 18 and 20 F. Bazy and bicoudé; the former, having five eyes, is very useful for indwelling catheter drainage. Rubber catheters, 15 and 18 F. (8 and 10 Eng.) for adults; 6, 10, and 13 F. (2, 4, 6 Eng.) for children. Several glass female catheters. Metal prostatic catheters, sizes 16, 18, 22 F. (8, 10, 12 Eng.). Curved metal bougies from 15 to 30 F. (8 to 18 Eng.) (Clutton's pattern for preference). It is important to remember that the sizes above 28 F. (16 Eng.) are only for use in special circumstances.

With regard to pattern of metal instrument one of the following would be the most suitable: Buckston Browne, Clutton, Liston, and Thompson. Of these I consider that the Clutton is the most satisfactory: the curve is less pronounced than that in the others, and consequently it is an easy instrument to pass; also it is marked in the French scale. The curve of the Chiene instrument makes it easy to pass, but this type is only marked up to 12 to 14 Eng. I feel it is better to avoid having the Lister pattern instrument, as this has a bulbous tip which jumps over the stricture and thus causes pain. The elaborate curve of the Béniqué sound is quite unnecessary, and because it makes the instrument more difficult to pass than those with the simpler curves the practitioner should also avoid this pattern.

It is wise advice that endoscopic instruments should be passed only by those general practitioners who are also operating surgeons or who have had opportunities for special experience in this department of surgery. The scope of this article hardly permits of a detailed consideration of this section of urethral instrumentation. With specialist assistance within easy call the tendency is for the practitioner to do less and less urethral instrumentation as his experience increases. Unless he has had a fairly concentrated training in this work he will find it more convenient in the course of time to leave it largely to those who are constantly doing it. If he comes to this conclusion early in his practice he will save himself considerable expense by avoiding unnecessary equipment. The instruments which will serve his purpose in these circumstances are to a very large extent those required for the relief of acute retention of urine. The rubber, glass, gum-elastic, and metal catheters already referred to should meet the case.

Technique of Urethral Instrumentation

It is a sound precaution to forestall possible difficulties by having a number of catheters ready before the instrumentation is begun. The gum-elastic catheters and bougies are generally conveniently accessible in the formalin sterilizer, and the metal ones, having been boiled, should be just as readily to hand, submerged in a weak antiseptic such as 2 per cent. boric acid or 1 in 8,000 oxycyanide of mercury. It is not always possible to have a sterile towel on which to lay instruments that have been used once and may be required again, but it is a great convenience if this provision is made. I, personally, always keep a stock of sterilized tins, each of which contains only a small towel and half a dozen gauze swabs (A. G. Sheldon and Co., 10, Nottingham Place, W.1). In all circumstances it is a great advantage, in the male, to instil into the urethra a local anaesthetic before beginning any manipulations. I shall describe what I have found to be a most satisfactory technique, and one which I employ daily in my practice:

The anaesthetic is a 0.5 per cent. solution of cocaine, and many years' experience of it enables me to say that it is the most efficient urethral anaesthetic that I have ever used, and that it is quite safe when administered in the proper way. The solution is made up freshly for each case, and is most conveniently kept in the form of cocaine hydrochloride in 3-grain powders, and a solution of sodium bicarbonate, ½ per cent., and chloretone water, ¼ per cent., made up with distilled water. For each case one powder is added to 1¼ oz. of the solution. To obviate the possibility of toxic symptoms from absorption I never employ the anaesthetic if urethral instruments have recently been passed or if acro-urethroscopy is intended.

There are various techniques for the injection of the anaesthetic into the urethra; the one I have found the most satisfactory is the following:

A special 20 c.cm. metal syringe is filled with the solution after it has been warmed. When the meatus has been cleansed with antiseptic the penis is grasped between the middle and ring fingers (palm upwards) below the level of the coronal sulcus after full retraction of the foreskin; the nozzle of the syringe is inserted into the meatus, where it is supported firmly by the thumb and forefinger, thus assuring a watertight junction. The whole syringeful is then very slowly injected into the urethra, taking about one minute to complete the injection. This procedure will result in filling not only

the anterior but the posterior urethra as well. If the injection is not made slowly the sudden distension of the urethra will almost certainly cause pain and urethral bleeding. It requires a little experience in graduating the pressure with the thumb and forefinger as the nozzle of the syringe is withdrawn, to overcome the tendency for some of the fluid to escape (Fig. 1). A penile clamp is now applied to the glans penis (Fig. 2). It is

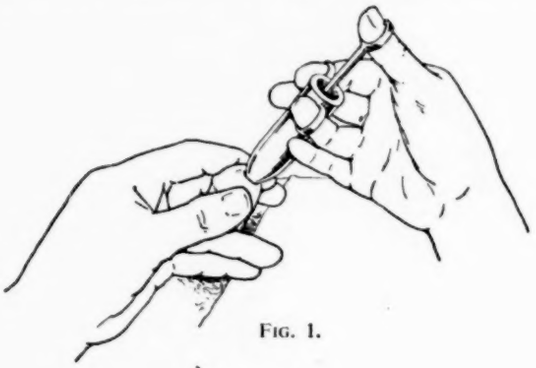


FIG. 1.

FIG. 2.

important to use only a clamp with a firm spring, otherwise some of the fluid will be ejected. In five minutes the whole of the urethra is completely anaesthetized. When, after releasing the clamp, there is reason to believe that a considerable proportion of the anaesthetic has entered the bladder, it is a wise precaution, if a catheter has not been passed, to see that the patient micturates before he leaves the consulting-room.

Catheter Lubricant is most convenient for use when it is put up in collapsible tubes. Sterilized petroleum jelly is unsuitable, because some of it is apt to be left in the bladder and, being insoluble, might become the nucleus of a stone. Glycerin is antiseptic and a good lubricant, and can always serve in an emergency. Liquid paraffin is even better, but it must be boiled before use.

The Passage of Instruments

When dealing with an unknown case of retention it is always safest to take a rubber catheter size 15 or 18 F. (8 or 10 Eng.). A large-calibre instrument can cause difficulty from urethral gripping, and a small one can do the same because of its tendency to curl up in the urethra. If a rubber catheter is not available then one of gum elastic should be used. As already mentioned, the important essential of this instrument is that it should be pliable. If it is considered too rigid, then it can be quite easily softened by dipping it for half a minute or so into very hot water. Severe trauma to a congested prostate, with all the dangerous sequelae which can follow, may occur even when great care is exercised if this primary requirement with regard to the flexibility of the catheters is absent. The bicoudé catheter should always be at hand in a prostatic case; as an alternative the coudé may be armed with its proper stylet, which gives the instrument a well-marked prostatic configuration. The metal prostatic catheter with its pronounced curve is usually easily passed, provided gentleness is used. It has the advantage of being light, and after feeling the tip enter the membranous urethra the outer end should be gently depressed, when, as a rule, it will find its way along even the markedly altered contour of the prostatic urethra into the bladder. Pressure in the face of resistance will almost invariably result in the tip of the instrument perforating the prostate, and bleeding and failure to enter the bladder will almost certainly be the consequence.

If a urethral stricture is suspected it is first important to establish the presence and position of such an obstruction. To get this information do not start the investigation with a filiform bougie, as its tip easily becomes caught in the mucosal folds, and this may quite easily lead to the false conclusion that a stricture is present. Start with a No. 12 F. gum-elastic bougie, and if this is too big to enter the stricture, successively smaller sizes may then be taken until entry is effected. Conversely, if the first instrument passes readily into the bladder, successively larger-sized instruments are employed. This procedure may quite likely result in the conclusion that no stricture is present. After drawing off the urine it is a matter for later investigation to ascertain the cause of the retention. If a stricture is present and one has ultimately resorted to filiforms, and these are employed one at a time on the face of the stricture with gentleness, rolling the instrument lightly between thumb and forefinger, success is more likely to follow than failure. The rolling movement of the filiform results in a thorough searching of the whole stricture face for the opening, which as often as not is in an eccentric situation.

Dilatation of Stricture

When no special difficulty has been experienced in finding an entry into the lumen of the stricture several larger sizes of instrument may be used in quick succession; firm gripping of the bougie by the stricture is the signal to stop the dilatation. When great difficulty has been experienced in finding a way into the stricture with a filiform, it is unlikely that on that occasion larger sizes of bougies will also be passed; in these circumstances it may be wise to tie the instrument in and to send the patient to bed. The urine will either dribble along the bougie or can be forced past by the patient; twenty-four hours later, as a rule, a larger size can be passed. A change is made to a catheter as soon as possible; the increase in calibre of the instrument is continued every twenty-four hours for a week. There should then be no difficulty in treating the stricture in the future by intermittent dilatation. If the bougie is not tied in the patient will certainly be able to pass enough urine to relieve his distress for the time being. It is an interesting fact that even when an instrument fails to enter the stricture the patient is nevertheless able to pass his water as a result of the manipulation that has been carried out. A good routine for the treatment of urethral stricture by intermittent dilatation is as follows: dilatation by gum-elastic bougies once a week; on each occasion after the first, increase the size by one until 18 F. is attained, then change to curved metal bougies once a fortnight, going up one size each time till 28 F. (16 Eng.) is reached. In the majority this should be considered the maximum size. Once this is reached it is to be determined in each individual case what is the longest interval that should be allowed between further treatments. This is found to vary from three weeks to twelve months. Repeated failure to advance the stricture beyond the filiform stage calls for treatment either by continuous dilatation or by internal urethrotomy.

It must always be borne in mind that over-dilatation and prolonged and unsuccessful endeavours to pass instruments can lead to the most serious consequences. In both circumstances latent infection, which is so often present

beneath the urethral mucosa or in the prostate, is apt to be stirred into activity, and even septicaemia or uraemia may result. In passing a metal instrument the rule should always be followed of not depressing the handle until the tip has been felt to engage the membranous urethra.

The Indwelling Catheter

This is used as a form of continuous dilatation for urethral stricture, but more commonly as a means of pre-operative bladder drainage in many types of disease for which it is necessary to open the bladder, particularly with regard to prostatic obstruction. It is also useful as a treatment for chronic cystitis.

The Bazy catheter is the most serviceable pattern. It is a coudé with five eyes. The catheter should be fixed with four strands of tape to the body of the penis with adhesive plaster, which should be applied fairly loosely. This form of drainage may be continued for long periods, but the catheter must be changed every three days. The bladder must be syringed through the catheter at least twice a day for the double purpose of irrigating the bladder and of satisfying oneself that the catheter is not blocked. A catheter which is blocked for several hours will probably do untold harm. In cases being prepared for prostatectomy it is a wise precaution against epididymitis to divide the vasa deferentia before the catheter is tied in. If a rubber catheter is used it must not be fixed to the penis with tape, which is certain to constrict the lumen. The anchoring must be effected entirely with the adhesive. In women a self-retaining catheter is easily inserted through the urethra with a stylet, and is simple to manage.

Females

The dorsal decubitus, with the patients' knees drawn up and fully abducted, is obviously the best position for the passage of a catheter. The external urinary meatus is effectively exposed by inserting the index and middle fingers of the left hand between the labia minora so that these can be abducted. The vestibule and external urinary meatus should be cleansed with antiseptic. Almost without exception all the urethral instruments used for the male can be equally well employed for the female. A glass catheter is the most convenient form of this instrument, however. A local anaesthetic is unnecessary as a rule, but if employed should be injected into the bladder.

Children

Rubber catheters should always be used for children; sizes as small as 6 F. (2 Eng.) are generally necessary for infants. It is exceptional to have to employ a general anaesthetic in females. With big boys, the local anaesthetic used in adults is often satisfactory; while with the smaller ones, especially when meatotomy is required as a preliminary, a general anaesthetic is essential.

Sterilization and Cleansing of Bougies and Catheters

Formalin vapour is a popular and satisfactory means of sterilizing these. Most of the sterilizers on the market for this purpose are thoroughly efficient. The important requirement with regard to them all is that they be air-tight. If they are not, the fact is soon betrayed by the smell of formalin. The glass cylinder with the formalin container at one end and a rubber stopper at the other represents the smallest form of sterilizer, and although too confined to hold all the gum-elastic instruments which a general practitioner should possess is most useful for purposes of transport. Provided the formalin container has been loaded and the stopper has been in the other end for an hour, then the interior may be considered sterile and the contents ready for use. For consulting-room purposes it is necessary to have one of the small metal formalin sterilizers with several trays for the instruments, so that these in their different sizes and patterns can be laid out in their proper order; in this way they can be quickly identified and selected without touching those not to be used.

One formalin tablet at ordinary room temperature in one hour will sterilize the whole of the contents of a catheter-container of such a size as would be required in general practice. The important essential to ensure sterilization is to see that the instruments are thoroughly dry, for prolonged periods of time are necessary for the vapour to penetrate and to sterilize any part but the surface of fluid which may be present. This fact brings us to a consideration of the most satisfactory method of cleansing gum-elastic catheters: the outside should be washed with soap and water, but with regard to the interior the first essential is to take the most effective means of clearing out blood clot or other debris that may be present. The importance of doing this can be readily appreciated when it is realized that it is uncertain whether even a small piece of blood clot can be rendered sterile by formalin vapour. To be sure of completely cleansing the lumen it should be dealt with as soon after use as possible. The nozzle of a heavy metal syringe should be driven firmly into the outer end of the catheter, and, using all the force possible, cold water should be forced through as often as is necessary to be assured that nothing remains which should not be there. Hot water should not be used, because the heat tends to coagulate rather than to dissolve fibrinous material. There remains the necessity for drying the interior of the catheter: the quickest method is to dip the instrument into boiling water. It need not be left in longer than thirty seconds; the heat which the catheter contains after removal from the sterilizer will then cause all the remaining water to evaporate quickly. Failing this method the catheter should be suspended vertically for a couple of hours; in this way it will become bone dry.

The majority of the brown-coloured gum-elastic catheters and bougies made to-day can be boiled for a period of three minutes on innumerable occasions without damage. It is my regular practice to boil them before they are passed. There is the added advantage in so doing that while the instrument is still warm any undue rigidity it may have had will be considerably lessened. In putting these instruments into the sterilizer they should be separated from the bottom by a perforated tray, otherwise some damage may be done to the outer coat. It is hardly necessary to add that all rubber, glass, and metal catheters, and metal bougies, should be sterilized by boiling just before use. When the facilities for this procedure are not available the instruments may be immersed in 1 in 4,000 oxycyanide of mercury for one hour; but this strong antiseptic should be washed off with 2 per cent. boric lotion before passing a catheter.

C. W. Bottema (*Nederl. Tijdschr. Geneesk.*, 1938, **11**, 6014) records his observations on the intensive modern treatment of syphilis by a combination of neosalvarsan and bismuth among 1,140 men in the Dutch Navy. One death occurred—a mortality of 0.087 per cent.—and fifty-three patients (4.6 per cent.) had various complications, which were either comparatively slight (albuminuria, urticaria, fever, and nitritoid crises), requiring only a modification of the treatment, or severe, such as agranulocytosis, toxic hepatitis, and purpura. In 647 patients whom Bottema had kept under observation for from five to seventeen years he found that the treatment had lowered the mortality from syphilis by 2.8 per cent. and the occurrence of complications by 4.9 per cent.

REPORT ON VETERINARY EDUCATION

The report of the Committee on Veterinary Education in Great Britain[1] gives the findings and recommendations reached by a Departmental Committee set up by the Ministry of Agriculture and the Department of Agriculture for Scotland. It makes a formidable indictment of the present state of veterinary education in Great Britain. The opening paragraphs point out that the veterinary surgeon is the physician of the farm, the guarantor of the nation's food supply, and that his functions extend far beyond those surgical duties suggested by his title, embracing the control and eradication of disease among livestock, and the giving of advice on all matters concerned with animal breeding and nutrition, as well as various administrative duties.

British livestock is an important national asset. The annual output of food products approximates £200,000,000 (being £191,000,000 for 1936–7). Estimated losses from disease amount to some £19,000,000 annually. The veterinarian is therefore an important factor in the nation's wealth, and indirectly, since many diseases of animals are communicable to man, in the nation's health. In the introduction to the report an outline of what has been achieved in eradicating disease among livestock is given, but it is easy to demonstrate that even though much has already been done, more remains to be done. From a purely economic approach there is consequently a *prima facie* case for the adoption of vigorous measures to improve the standard of education of the veterinarian as an insurance against future losses among the animal population.

The Present Position Criticized

It should be pointed out that throughout the report it is emphasized that the major blame for the unsatisfactory state of affairs must rest with the Government. Veterinary education has been seriously starved of adequate financial support. Since the war a considerable amount of financial assistance has been given to veterinary research, but no comparable sums have been spent on education. The report analyses the present position with reference to each of the four veterinary schools—in London, Edinburgh, Liverpool, and Glasgow—and makes a series of recommendations applicable to each. In addition, plans are outlined with reference to a proposed school for specialized training in research to be established at Cambridge. There are some who may criticize the suggestions regarding Cambridge, on the ground that if implemented they may create special facilities for those only who can afford to go there. This will give them an advantage in training over students who cannot afford this expense, and possibly lead to a stifling of potential ability.

In addition to specific recommendations for each of the schools, the present curriculum of veterinary study is drastically criticized. The deficiencies in the present system of training, the lack of fluency in the course, and the discrepancies in training in the basic subjects are discussed and a new curriculum of study which is calculated to correct these errors is proposed.

The system of professional government by the Royal College of Veterinary Surgeons is given some attention. This body exercises an autocratic control over the conduct of the professional examinations. It elects its own examiners and awards the qualifying diploma of membership. Besides this, it exercises disciplinary professional functions over its members and attempts to protect the profession from the encroachments of unqualified practitioners. The report recommends that the Council of the R.C.V.S. should be given power to include on the Council and Examination Committee representatives of the veterinary schools and the five Universities of Cambridge, Glasgow, Edinburgh, London, and Liverpool.

[1] London: H.M. Stationery Office. 1938. (2s.)

Constructive Recommendations

A definite innovation is the suggestion that at the end of the first three years of study students should have the opportunity of taking a degree in science on their way to the professional qualification of M.R.C.V.S. The subjects which will be included in the study for this degree are the basic subjects of chemistry and physics, biology, anatomy of the domesticated animals, histology and embryology, general physiology and biochemistry, applied physiology, veterinary pathology, bacteriology, and immunology, and veterinary parasitology. The more purely professional subjects—animal husbandry, hygiene, toxicology, pharmacy, medicine, surgery, and clinical work, etc.—are suggested for the fourth and fifth years of study.

It is refreshing to note that for the first time the official recommendation is made that instruction in animal husbandry and clinical subjects should take place in field stations attached to the teaching institutions. Veterinary education has somewhat blindly followed medical educational practice by becoming centred in cities and large towns. Whereas there is every justification for maintaining medical educational institutes in the centres of large human populations, where facilities for clinical study, hospitals, asylums, etc., are concentrated, it is obviously illogical to maintain veterinary teaching centres exclusively in towns instead of making close contacts by means of field stations with centres where animal populations are concentrated. With the disappearance of the town dairy, and with the marked reduction in horse transport of goods in cities, the only species of animals met with in abundance in the cities are dogs and cats. The veterinary hospitals in cities are consequently filled with these animals, and the numbers of farm animals available for student instruction are becoming more and more limited.

The Preventive Aspect of Veterinary Medicine

A further important reason for recommending the institution of field stations is that a change in outlook is slowly coming over the veterinary profession. While the sole emphasis in the past has been upon disease and its treatment and control, the functions of the veterinarian now include the much more positive aspects of prevention. Health as well as disease now enters the field as a subject for study. It is for this reason that the report recommends a more prolonged study of physiology and especially applied physiology, and a far more extensive course in animal husbandry, hygiene, and nutrition. In order that these latter subjects can be adequately studied and taught there seems no alternative but to provide a field station, where first-hand instruction and *ad hoc* demonstration can be given.

It is a curious criticism of the present system that no effort has been made earlier to provide facilities for this aspect of teaching, and it is a just criticism that these important components of proper veterinary education cannot be adequately taught with the present facilities in schools situated in purely urban areas.

The report recommends the expenditure from Treasury funds of a capital sum of £299,000 and recurring annual grants rising to £61,350, together with such sums as may be needed for the maintenance of field stations. It must be pointed out in this connexion that the sums recommended are comparatively paltry when the capital value of the livestock of Britain is remembered, or even when the annual loss of £19,000,000 from disease is borne in mind.

Doubtless, there may be adjustments and perhaps compromises necessary before the State implements the recommendations; but there can be no doubt that the principal of these recommendations, if acted upon promptly, will result in a marked improvement in the quality of veterinary education and in the status of the veterinary profession. It is to be hoped that an opportunity such as this report offers to a sister science and a co-member of the healing profession with human medicine will not be neglected by those concerned.

THE NURSING SERVICES

INTERIM REPORT BY INTERDEPARTMENTAL COMMITTEE

An interim report by the Interdepartmental Committee on Nursing Services, of which Lord Athlone is chairman, was published by H.M. Stationery Office last Saturday (price 1s. 6d.). The committee was appointed jointly by the Minister of Health and the President of the Board of Education in November, 1937, to inquire into the recruitment, training, and registration, and terms and conditions of service of persons engaged in nursing the sick and to report what changes or other measures are expedient in order to maintain an adequate service, both for institutional and domiciliary nursing.

Some of the committee's recommendations affect all branches of the nursing service (except mental nursing, which will be dealt with in a further report), but in the main the report is concerned with the shortage of nurses in hospitals and institutions. Suggestions are made for the improvement of conditions of service, including salaries, pensions, and hours of work. The committee also deals with the pre-nursing education of the intending nurse, the division of the Preliminary State Examination, and the establishment under statute of a second grade of nurse. The following is a summary of the more important conclusions and recommendations contained in the report.

The Shortage of Nurses

The committee is satisfied that there is at present an acute shortage of nurses, both of candidates for training and of State-registered nurses, and that this shortage affects in the main hospitals and other institutions for nursing the sick. This shortage has been caused not by any falling off in the number of recruits to the profession but by a greatly increased demand in recent years for the services of nurses by the competition of outside employment, and by the fact that a large number of nurses and probationers, for one reason or another, cease each year to practise their profession. The committee's recommendations are therefore aimed at reducing this deficiency by substantially increasing, if possible, the number of recruits to the profession and by reducing the number of probationers who fail to complete their course of training.

With striking unanimity the witnesses who came before the committee stressed the importance of improving the status of the profession, and it appears that the chief stimulus to recruitment can no longer be the "sense of vocation." The committee holds that the nursing profession should be given a status in the eyes of the public at least comparable to that of the teaching profession, and, having regard to the essentially national character of many of the services performed by nurses, it recommends that certain fundamental issues should be dealt with on a national basis.

Salaries and Pensions

Of these fundamental issues perhaps the most important are salaries and pensions. The committee is satisfied that generally the salaries of nurses are too low and that particularly in the higher ranges of the scales paid there is need for substantial revision. The prospects in the nursing profession compare unfavourably with the prospects in other spheres of employment open to women.

The committee recommends that there should be established as soon as possible national committees composed of representatives of nurses and their employers, to negotiate suitable scales of salary, on the lines followed by the Burnham Committees for the salaries of teachers. It further recommends that pensions for nurses should be universal, and interchangeable between all branches of the profession.

Hours of Work

Next to poor financial prospects long hours of work are the most serious of all the controllable factors which hinder recruitment to the profession. The committee was impressed by evidence of a condition of chronic tiredness among nurses, and, while hospitals have been endeavouring to reduce the hours of work in recent years, many nurses are still working excessively long hours. The committee considers that the establishment of a ninety-six-hour working fortnight for all nurses in hospitals, both for those on day and for those on night duty, is an essential and urgent reform, and it recommends that this should be introduced by all hospitals as soon as circumstances permit. Such a step inevitably means an increase in staff, and in order to meet present difficulties the committee thinks that the nursing staff should be relieved so far as possible of all domestic duties by the employment of ward maids and orderlies and that consideration should be given to the employment of married nurses much more widely than is the present practice.

Some members of the committee, in a reservation, state their opinion that only by legislation will it be possible to ensure that a ninety-six-hour working fortnight is introduced in all hospitals at a reasonably early date, but the majority consider that legislation of this kind would be undesirable and impracticable.

Other Conditions of Service

The committee is satisfied that great improvements have been made in recent years in the conditions of service of hospital nurses and that many criticisms are unjustified. At the same time conditions still exist in some hospitals which hinder recruitment generally, and these conditions should be rectified. Among other things the committee recommends that all hospitals should have a nursing time-table, showing "on duty" and "off duty" times for at least a fortnight in advance; that nurses should have four weeks' annual leave, excluding any period of sick leave; that the accommodation in the nurses' home should reach a minimum standard of comfort; that permission to trained nurses to "live out" should be more widely granted; that the standard of catering for the nursing staff should be improved; that probationers should be relieved of unnecessary domestic work; and that hospital rules should be revised in order to secure the removal of unreasonable restrictions.

To secure that reforms of this kind are carried through and to establish machinery for the removal of grievances and causes of friction in an amicable manner, the committee recommends the setting up in every hospital of a nurses' council, representative of the nursing staff and their employers. Such a council would, with the necessary modifications, operate on the lines of a Whitley Council. From these local councils the committee envisages the development in the future of a national council to take oversight of the conditions of service of hospital nurses in the broader aspects.

Grants to Hospitals

The carrying out of many of the recommendations of the committee would involve hospitals in heavy increases of expenditure. In view of the national importance of an adequate nursing service it therefore recommends an increased payment of grants from public funds to hospitals. The majority of the members consider that grants from national funds should be paid to all hospitals, voluntary and municipal, which are recognized as training schools by the General Nursing Council in respect of the work done in training nurses, and that grants from public funds, under the necessary measure of public control, should be paid to all efficient voluntary hospitals in so far as may be necessary to assist them to meet the cost of the contemplated increase in nurses' salaries and other essential reforms.

To these recommendations there are three reservations to the effect: (1) that grants from national funds should not be paid to training hospitals as such; (2) that, on the evidence before the committee, it is not possible to express any opinion on the source, or the method of administration, of grants to voluntary hospitals; (3) that the National Exchequer should bear either the whole, or at least one-half, of the additional financial burden involved by the adoption of the committee's recommendations.

Age of Entry to Hospital

The committee considers that a minimum age of entry to ward duty in a general hospital of 19 years would be desirable for recruits to the profession, but having regard to existing circumstances they recommend 18 years as the minimum age. The universal adoption of this recommendation may not be practicable at the moment, but no girl should be admitted to work in the wards of any hospital below the age of 17 years.

Division of the Preliminary State Examination

The Preliminary State Examination is the first professional examination to be passed by the intending nurse, and has hitherto been taken after a year's training in hospital. The General Nursing Council has now resolved to divide this examination and permit candidates to take the first part before entry to hospital. The committee commends this proposal, as thereby the strain on the probationer during her first year of service will be materially lightened, and it makes recommendations for the setting up of courses to prepare candidates for the examination for the first part, which will in time, it hopes, become the normal portal of entry to the profession. In the committee's view a full-time course of one year's duration will be enough for the secondary school girl, and a part-time course of two years' duration for the ex-elementary school girl who desires to enter the profession.

As the age at which it is proposed that the first part of the Preliminary State Examination may be taken is 17½ years the committee hopes that the "gap" between leaving school and entering the profession, which in the past has, it is said, caused the loss of many suitable recruits, will be filled by these full-time and part-time courses. The secondary school girl will begin her course at 16½, usually after taking the School Certificate, and the ex-elementary school girl will begin the part-time course at about 15.

The Test Examination

The test examination in English, general knowledge, and arithmetic was introduced by the General Nursing Council a little over a year ago, in order to ensure that entrants to the profession who did not possess the School Certificate or its equivalent should reach a certain standard of education. The committee considers that owing to the division of the Preliminary State Examination the test examination should in time disappear. It recommends that the test examination should be retained, as a temporary expedient only, for those entrants to the profession who have not passed the first part of the Preliminary State Examination or hold the School Certificate or its equivalent, but that the age of entry to this examination should be reduced from 17½ to 17 years and that certain modifications should be made in the character of the examination.

A Second Grade of Nurse

The committee recommends that the persons known as "assistant nurses"—that is, persons who practise the nursing of the sick without being State-registered or holding a recognized qualification—should be given a proper professional status and placed on a roll under the control of the General Nursing Council. Persons at present working as assistant nurses would be admitted to the roll on evidence that they had practised nursing of the sick for at least two years and are competent and of good character. Thereafter assistant nurses would have to undergo a course of training of two years' duration, the training being of a practical nature, and would be admitted to the roll at a minimum age of 21 and on evidence of character and competence.

The committee is of the opinion that, excepting nurses in training, only State-registered nurses and assistant nurses on the roll should habitually and for gain nurse the sick; but the question whether it is practicable to enforce this by legislation is reserved for further consideration. The committee recommends that only nurses on the State Register or the roll should be supplied by nurses' co-operations and agencies for the purpose of nursing the sick, that the qualifications of the nurse supplied should be stated, and that local authorities should be empowered to license, register, and inspect all nurses' co-operations and agencies. The committee's recommendation that a roll of assistant nurses should be formed is conditional upon the enactment of these safeguards. The majority of the members recommend that the name "assistant nurse" should be retained and protected by law. In a reservation some members advocate what they consider a more distinctive official designation—"registered invalid attendants."

WORLD NUTRITIONAL STANDARDS

LEAGUE OF NATIONS SURVEY

During the last three years the League of Nations has put nutrition on the world map. The question of an investigation into nutrition in all countries members of the League was brought forward in the Assembly by the Australian delegation, less, as it seemed at the time, out of concern for the nutrition of the masses than in a desire to relieve agricultural depression in food-producing countries. What was then begun, however, has widened out into an excellent piece of sociological work, the results of which up to date are embodied in a *Survey of National Nutrition Policies, 1937–38*.[1] The Assembly suggested that national nutrition committees, of which there are now more than twenty, should forward annual reports on action taken by them to study the state of nutrition in their respective countries and to improve nutritional standards, and the *Survey* is the first of what is presumably to be an annual summary.

The reports from the different countries are, of course, of unequal value. In some countries this work has hardly begun. Some reports are confined to a description of methods contemplated or started, and even when results are given they often relate to such small sections of the national community as can hardly form an index to the nutrition of the country or of its working-class population. In the case of the United Kingdom the report is most detailed. The conclusions of the Ministry of Health Advisory Committee on Nutrition are summarized, and some account is given of the various dietary studies which have followed from it, especially the extensive investigation proceeding under the direction of the Rowett Institute, Aberdeen, aided by a grant from the Carnegie Trust, in which about 1,500 families form the material for the research. Australia, too, the prime mover in this League endeavour, has got things going. The Commonwealth Advisory Council undertook a twelve-months survey of household dietaries in the five capital cities. It is disappointing to find the evils of the old world repeating themselves in the new, and to learn that an inquiry among pre-school children in Melbourne has revealed evidence of malnutrition in over 21 per cent. of those examined. New Zealand seems to be the nearest approach to a nutritional paradise. It has no slum conditions comparable with those in the older countries, and at any rate the gross manifestations of deficiency diseases such as rickets and scurvy are not present, though even here the school medical officers report that a proportion of school children suffer from faulty posture and minor physical defects, and two conditions which give rise to concern are dental caries and goitre.

Nutrition in European Countries

What one misses from the report and would greatly like to have is a survey of the situation in Germany, or indeed in any of the totalitarian States. In a discussion at the Royal Statistical Society the other day on the economics of the Third Reich, to which many experts

[1] *Survey of National Nutrition Policies, 1937–38.* League of Nations. London: Allen and Unwin. (2s. 6d.)

contributed, it was stated that although the cost-of-living index in Germany has risen during the present regime rather less than in this country, there has been a deterioration in the quality of food, with temporary, local, and spasmodic shortages of certain kinds of food—butter, eggs, and meat—leading not so much to continuous rationing as to a certain limitation of choice. In Germany there is almost no unemployment, but the energies of the nation are being thrown into capital works, especially armament, at the sacrifice of the general standard of living. During the last five years the number of people employed on machinery has doubled, but only 5 or 6 per cent. more people are employed in the food industries.

Turning to other Continental countries, the "Assemblée Française de Médecine Générale" has carried out a survey through general practitioners on the consumption habits and incidence of states of dietary deficiency among their patients, and the general conclusions are that, on the whole, nutrition in France is adequate, except in the slums, but that cases of inadequate diet may be found in the richer classes as well as in the poorer. In Belgium a very unhappy state of affairs is revealed in the Liége district, where 1,200 children were observed whose diet showed a marked deficiency of protective foods. Dental decay, rachitic symptoms, and chronic infections of throat and nose (with chronic cervical adenitis) were frequent. In Hungary the surveys have so far covered some 40,000 people in different geographical regions and social groups. The main conclusions are that the intake of calories and animal proteins is inadequate among the poor, that the standard of culinary technique is low (apart from the baking of bread), and that the consumption of fruit and green vegetables is not at all what it might be.

Some information is forthcoming from the United States, where there is a Technical Committee of Food and Nutrition, forming part of an interdepartmental committee to co-ordinate health and welfare activities. The outstanding fact seems to be the uniformity in American ideas as to what is right to spend on food (between 25 and 40 per cent. of income), but it is rather inferred that the American housewife does not get good value for it. In Eastern countries also a good deal of attention is being paid to the subject of nutrition. In Egypt a survey has been made on the distribution of pellagra and the factors governing its occurrence, also on rickets and its causation. In Iraq a large proportion of the population apparently subsists on a surprisingly low diet—in many cases bread, tea, and sugar, with lettuce and water melon for part of the year. It is estimated that for about three months of the year vitamin C is absent from the food of the fellahin.

Special Researches

Several of the national committees are engaged on special researches, such as the relative nutritive value of different foodstuffs. In Canada a national dietary standard has been drawn up—a compromise between minimal and optimal requirements. In France various research centres are working on problems relating to metabolism, one central laboratory is engaged on the role of different vitamins B in nutrition, and on the importance of biochemical equilibrium in diet. Work is also proceeding at agricultural experimental stations in the United States on the vitamin content of foods as affected by different factors, especially on the effect of canning and of cooking. Attention is drawn to work done in the United Kingdom on the conversion factors for individual foods needed to ascertain the actual quantity of nutrients consumed in relation to any given amount of food purchased.

Consumption of Milk

Many countries are concentrating on milk consumption as the simplest and most promising line of attack on the nutrition problem. Special reference is made to the report on the milk-in-industry scheme in the United Kingdom. The scheme obtains in over 7,000 factories employing 2½ million workpeople, and the consumption, which is at the rate of 8½ million gallons a year, has nearly doubled in twelve months, resulting in decreased absenteeism and better health among the workers drinking milk daily. Milk campaigns are taking place in Belgium, Hungary, Latvia, and Finland. Finland appears to be the most "milk-conscious" country of all. The daily consumption of milk per head in the capital, Helsinki, is 0.65 litre, or about 2 pints—a Brobdingnagian draught by the side of the milk ration in most countries. On the other hand, in Hungary, if the requirements were fully met, the present production of milk would need to be increased by 120 per cent. A committee in Budapest is working out a plan for the reorganization of agricultural production such as will lead to a substantial increase in the production of milk and other essential foodstuffs. In Norway, which has a high milk production, a survey showed that fifty-three families out of a total of 301 observed did not use any whole milk during the four weeks of the investigation. The milk consumption of Norway in general is said to be irregular, and that of milk products too small as well as irregular, yet Norway, at a cost of £50,000 a year to herself, exports cheap butter abroad while her own people are not consuming sufficient. The world of economics is fully as fantastic as the world of politics. But Norway is progressive enough, as witness the "Oslo breakfast" for school children, which is also being introduced into Belgium and other countries.

The *Survey*, which also discusses economics and education and publicity, will be a useful little document in the hands of those attending the National Conference on Nutrition which the British Medical Association is summoning in London in April next.

Nova et Vetera

A CENTENARY IN MEDICAL JOURNALISM

The centenary of the *Medical Press and Circular* was celebrated by a dinner held at Claridge's Hotel on January 25. Mr. Cecil P. G. Wakeley presided over a company which included many distinguished members of the medical profession and representatives of sister journals. Lord Horder proposed the health of the centenarian, saying that they were gathered to pay tribute to a journal whose aim had been to interest the general practitioner, to keep him informed of the progress of medical knowledge; to protect his interests, and to maintain the honour of the profession. At the time the *Dublin Medical Press* came into existence there was very little cohesion in the profession, and, indeed, a lamentable enmity between such few institutions as did exist. That was true of Ireland particularly, where the journal had its origin, but in England things were not much better. The Provincial Medical and Surgical Association, which later became the British Medical Association, was in 1839 but seven years old; weekly medical literature was scanty, the *Lancet* and the *London Medical Gazette* had been only a few years established. The few quarterlies or monthlies of the period did not reach the practising doctor, nor did the hospital reports. Several periodicals had died in infancy. The founder of the *Dublin Medical Press* was an ophthalmic surgeon, Dr. Arthur Jacob, who saw clearly the need for organization and the importance of developing and maintaining an ethical standard in the profession. His journal became a means of such development, and played a great part in the foundation of the Irish Medical Association, which was born in the same year. His son, Archibald Jacob, followed in the editorial chair, and remained there for forty years, during which his paper helped to achieve many reforms of a medico-political kind. It was during his editorship that the *Medical Circular* came into existence in London, and after fourteen years this was absorbed by the older journal. The *Medical*

Circular was probably founded by James Yearsley, who also created the *Medical Directory*. With this amalgamation of the two journals in 1866 the publication was transferred to London, and A. A. Tindall owned and published the journal for no less than sixty-five years, up to his death, at the age of 91, eight years ago.

Mr. Cecil Wakeley, the present Editor, responded to the toast. He said that when he first became acquainted with the *Medical Press and Circular* he was fortunate enough to come under the influence of Dr. Harry Campbell, who looked on his work with the journal as a hobby, and exemplified the fact that a hobby might be a relaxation from and yet a stimulus to work at one and the same time. The policy of the journal had always been, and would always be, to give the medical practitioner information which was important in everyday practice. The medical profession was really a great body of research, clinical research was the most important of all, and it was through the medical journals that the knowledge gained by research was disseminated throughout the profession.

Sir Humphry Rolleston, in proposing the toast of "Medical Journalism," said that editors of medical journals did all they could to instruct the members of the profession, to keep them up to date, and to provide them with the material on which they could form their own opinions. Editors were a modest race and shunned the limelight, but they had great experience and wide knowledge of human nature, as was shown by their dealings with their contributors. He divided medical editors into two classes, the first being the "whole-time Olympians," such as the late Sir Squire Sprigge and the late Sir Dawson Williams, but with these he mentioned the late Charles Louis Taylor, assistant editor of the *British Medical Journal* for many years under Dawson Williams—a wonderful medical journalist, though he held no medical qualification. But the larger number of medical editors, like Mr. Wakeley himself, were "part-time Olympians," and to them also the profession was indebted.

Two responses were made to the toast, the first by Mr. Eric Pearce Gould, who referred to the considerable contribution which the professional journals made to the general equipment of the profession, and the other by Mr. R. F. West, great-great-grandson of Dr. Arthur Jacob, who suggested that the time had come for the writing of a history of medical journalism. He said that Dr. R. J. Rowlette, in his recent history of the *Medical Press and Circular*, had lifted one corner of the curtain, and on behalf of those connected with the publication of the journal he thanked him for the care and industry which he had devoted to this little memorial. The history in its way was also the history of the medical profession, from a state of chaos so far as professional organization was concerned to the present happier times.

JAN EVANGEL PURKINJE

Born in 1787 and dying in 1869, Purkynĕ's name connotes little more than "the cells of Purkinje" to most British histologists and neurologists. A Bohemian by birth, he was destined for the priesthood, drifted into medicine at Prague, was appointed professor of physiology at Breslau in 1822, and was called to Prague as professor of physiology in 1849. Here he was long known for his friendly personality, and published many papers in German periodicals, but wrote no book. The whole of his works are now being issued in six quarto volumes. The first volume was published in 1918; the second volume, which has just appeared,[1] contains his contributions, written in German, on the physiology of men, beasts, and plants, with some other contributions written between 1820 and 1845. This second volume contains a portrait of Purkinje as a frontispiece, and a summary of its contents, but there is no index. From the librarian's point of view it is unsatisfactory, because it is issued in a paper cover and the sheets are not stitched. It must therefore be cased before it can be issued to readers.

[1] *Sebrané Spisy* (*Opera Omnia*). Volume II. By Jan Evangel Purkynĕ. (Pp. 179; no price given.) Prague: Purkynova Spolecnost.

NEUROSES IN WAR-TIME

LECTURES AT THE TAVISTOCK CLINIC

The last two lectures of the course on "Neuroses in War-time" at the Tavistock Clinic were delivered on January 26, when Dr. G. W. B. JAMES spoke on "Physical and Psychotic Syndromes" and Dr. J. R. REES on "Emergency Treatment of Neurotic States."

PHYSICAL AND PSYCHOTIC SYNDROMES

Dr. James opened by saying that the neuroses of war could be considered in two ways: first, by looking back at the experience of the last European war, and, secondly, by endeavouring to anticipate ways in which a future war might differ from the last. His own experience was obtained during three and a half years in France, first as a field ambulance officer, later as battalion officer, and for a month or two at the base looking after the so-called shell-shocked cases. In the early part of the war few physicians and certainly hardly any members of the public had any close familiarity with psychotic or psychoneurotic syndromes, but by Christmas, 1914, a dozen or more officers and a few hundred men of the regular army had been evacuated with queer symptoms labelled neurasthenia, shock, exhaustion, or concussion. Very few neuroses occurred during quiet trench warfare, but they ran into thousands after set battles. It was said that a new war disease had appeared, and that "of course" the doctors could do nothing for it, and also that it appeared to be due to the rapid growth of high-explosive artillery.

Four Categories

He divided these casualties into four groups, which he named colloquially the "blown-ups," the "wind-ups," the "fed-ups," and the "signed-ups," meaning by the last the cases of classical psychosis. The "blown-ups" were cases in which there had been serious injury as the result of shell explosion or burial in dug-outs or buildings. The majority were badly shaken, showing a condition comparable in civil life to that following a motor smash. The "wind-ups" comprised the multiple hysterical manifestations, loosely summarized as shell-shock cases proper. The "fed-up" cases occurred among the very best type of men, some of whom had been in every "show" of the battalion in which they served. They had had very infrequent periods of rest, and eventually they became neurasthenic. Leaving the "signed-ups" out of account, the "blown-ups" represented 25 per cent. of the cases and the "wind-ups" and "fed-ups" 75 per cent.

There was also a very large group of cases of the "fed-up" category which never appeared in the official figures, but showed symptoms probably common to all who served in the field—namely, a mild exhaustion, usually put right by rest. The symptoms ranged from mere staleness to a profound condition of "fed-up-ness," often accompanied by severe emotional depression. This depression led to a deliberate seeking of what the soldiers called a "blighty"—namely, a wound which would take them home—and sometimes the wish took the form of a self-inflicted injury or a deeper wish for death, which ended in suicide.

The "blown-ups" showed light shock or graver injuries affecting the brain, with or without involvement of the skull, and the psychotic symptoms which followed such an experience. The "wind-ups" showed conversion hysteria and the anxiety state, and the "fed-ups" neurasthenia and the exhaustion syndrome.

Head Injuries

In a more detailed examination of these different categories, Dr. James said that in the "blown-up" cases, where the skull was obviously fractured and the patient deeply unconscious with laceration and exposure of brain tissue, immediate evacuation was always carried out if at all possible. A good many mistakes were made over the

prognosis of these cases of head injury, and he remembered that he was himself almost reprimanded because, after writing a gloomy letter to the relatives, he learned that the patient had arrived in London in excellent condition. It was his impression that as a class these "blown-ups" were not taken seriously enough. The remote effects of mild concussion were much underestimated. He could recall more than one instance of a man who had been taken out of a smashed dug-out or building, and whom he believed to be hysterical, having certainly no focal signs of injury, who died between the aid post and the field ambulance station after being sent down the line. Cases in this group often showed hysterical and anxiety symptoms at a later stage, but it was the organic conditions to which he wished to refer. The experience of being blown up or knocked down by shell fire appeared sometimes to be the starting point of epilepsy. It might be that service conditions lighted up a constitutional tendency to epilepsy, though there were no figures to support that thesis. Among the "blown-ups" he saw more than once the precipitation of symptoms of general paralysis, and another organic disease apparently following a "blown-up" episode was disseminated sclerosis.

The "wind-up" group showed many physical symptoms, including blindness, deaf-mutism, and parapleg.a. A vicious circle was sometimes set up in which the vegetative nervous system played a very large part. A quite trivial episode might precipitate a severe condition in men of the "wind-up" class, especially if the episode was unexpected. He knew many men of this type who went through a battle quite successfully and broke down hysterically when an unexpected explosion occurred on a quiet sector.

The "fed-up" cases seemed to begin invariably with symptoms of exhaustion or fatigue. It had to be remembered that the soldier had very little relief from exposure to weather and to shell-fire, and his drill and preparation were extremely monotonous. He became stale, lost interest in his work, and sometimes got into unmerited trouble with his officers.

True Psychosis

There was no evidence to show (Dr. James continued) that insanity owing to the stress of war was more common in the soldier than in the civilian. In the great war the evidence was rather the other way. He related one or two experiences of his own showing the possible effect of war in precipitating psychosis. In one case a man under 40, a regular soldier who had been subject to manic-depressive psychosis before the war, went through the whole period of war service without a relapse but had a severe attack of depression shortly after the armistice, during which he shot himself.

He quoted some figures given him by Dr. Prideaux of the Ministry of Pensions disproving the popular view that the strain of war increased the incidence of insanity among the troops. The average number of new admissions annually to mental hospitals of men of military age—that is, 20 to 44—was approximately 80 per 100,000 of the population. The average strength of the Army during the war was 3,000,000, so that on that basis there should have been a yearly admission rate due to psychosis of 2,400, which would have corresponded to the civilian average. Actually the total number for whose care the Ministry of Pensions accepted liability—and this represented 95 per cent. roughly of the total considered—was just under 5,000 for the whole of the five war years. This suggested that the incidence of psychosis among soldiers in the great war was considerably lower—more than 50 per cent. lower—than would have been expected had those soldiers remained in civil life.

As to the changes in war conditions which must be expected in a future conflict, the greatest was that the war strain would no longer be confined to the armed forces but would extend to civilians. He believed that the "blown-ups" and also the "signed-ups" would be increased in number, while the "wind-ups" would probably be much diminished. It seemed to him that the civilian population, while it might show panic and easily evoked hysterical symptoms, would not require to maintain those symptoms, especially if care were taken to limit all questions of compensation to consideration at the end of hostilities. The increase in the number of "blown-ups" would be due to the effect of long-range artillery—that is, bombing from the air—on buildings and large centres of population. Again, both sexes would be involved, and would include children, adolescents, the middle-aged, and old persons. The "wind-up" group would not have a high incidence such as it had in the great war, for the reason that then the men were away from home, fighting in a land in which they were aliens, with little or no contact with the civil population owing to the difficulties of language. If this country were attacked the people would at any rate be at home, among their own associates and belongings. From such small numbers of the civilian population as one saw in France it seemed that they were singularly free from psychotic or neurotic manifestations in the sense in which he had used the term "wind-up."

The "Fed-up" Group

The "fed-up" group was a distinct danger. The size of this group in the civil population would depend on the duration of the war and the frequency with which urban areas were submitted to bombardment. He would expect the "fed-up" group to appear within three or four months if there was serious interference with sleep and rest. Those who lived in crowded areas liable to attack must, if the war was to be continued for long, be secured moderately frequent rests away from the attacked areas and be able to sleep in safety. It was impossible to imagine workers continuing to put in a ten-hour day in the factories if at night their sleep was liable to be disturbed by fear of air bombing.

Dr. James concluded with a remark about the remote physical after-effects of the late war. Few who served with the fighting troops could be unaware of the tremendous strain imposed. It meant that the generation concerned was likely to be short-lived, and there was some evidence of that among the group of men who were aged from 20 to 40 in 1914, and were active soldiers in the great war, in the present rise in sudden deaths from cardiovascular disease. Thus the casualties of war were by no means over when the armistice was signed.

EMERGENCY TREATMENT OF NEUROTIC STATES

The final lecture of the series was delivered by Dr. J. R. REES, Medical Director of the Tavistock Clinic. He began by pointing out how considerable a problem had to be faced in this field. Some had even said that the psychological casualties as compared with the physical casualties might be in the ratio of three to one. That might seem fantastic, and yet the figures given by Dr. Millais Culpin relating to neurotic symptoms among those working in industry suggested some idea of the largeness of this problem.

Dr. Rees said that he personally learned his first lesson about the handling of civilians under conditions of this kind when he was in charge of the civilian hospital at Ypres. About Christmas, 1914, when shelling started on and around the building, the sisters, who were Belgian nuns, walked round calmly sweeping up the broken glass and laughing with the patients, while the doctors and orderlies got the patients down to the cellar. Those nuns had a calmness in the face of danger that certainly had a therapeutic value for the English doctors and orderlies as well as for the patients themselves. Whether such calmness came from religion or from fatalism, whether it was the result of training or of an inborn sense of duty, it was certainly the first and most essential attitude

for doctors who were leaders and organizers in any group to adopt, because their courage would be communicated to their staff and patients.

The second lesson he learned during the early months of the war was the need of the civilian population for security. The people of Ypres spent their time in caves in the old walls of the city, completely sheltered. Here, despite darkness and vermin, they were cheerful and able to sleep at night, and he believed that the morale of those people who were out working in the day was largely due to the fact that they had security and safety at night. It was most desirable to provide some kind of security for the people they had to look after. Even the semblance of security was better than nothing; if deep shelters or safe cellars could not be provided, sandbags were not without value from this point of view.

Equipment for Emergency

The first-aid shelters should have adequate light and warmth and a liberal supply of the usual offices. Separate rooms would be necessary into which disturbed patients, patients with violent emotional outbursts, should be placed and in which also the doctor could talk to people in private if there was time to do so. It was essential that there should be separate rooms for children, with an intelligent person as nurse, and furnished with toys and children's books and so forth. In those conditions the children would be quiet as they never would be if left with fluttering parents. Dr. James had suggested—and he agreed—that it was a good thing to have the sexes mixed. There was a moral value in keeping together men and women who had the same kind of problems to face. Any attempt at separation of the sexes was to be deprecated. Another element of psychological value would be a gramophone with popular tunes. The effect of music in getting people relaxed and calm was by no means to be despised.

With regard to the things which should be in stock beforehand, he mentioned in the first place the teapot and sugar basin. Alcohol undoubtedly had a part in emergency treatment, and whisky or rum in tea was extremely useful, particularly for people who were in danger of sudden collapse. Food and sweets were important psychologically as well as physiologically. As for drugs, such a mild sedative as bromide and chloral hydrate would help many people of the "wind-up" group. Obvious things like sal volatile and morphine should be included, also he thought nembutal and medinal. Dr. James had made the suggestion that the amount of any drug given to a patient should be clearly marked on him, together with the time of administration after the Continental fashion (for example, 15.30).

He was not sure that Dr. James was right in assuming that the anxiety cases would be fewer than the hysterical. In civil life the anxiety cases outnumbered the hysterical by three to one, and in war-time he thought they would have more cases of anxiety to deal with. It was true that cases of gross excitement and of stupor and confusion would be better evacuated and that no attempt should be made to deal with them in the first-aid posts, but the acute anxieties and acute emotional outbursts could be treated then and there. From this point of view the nurses and orderlies should be instructed to encourage people, while waiting perhaps for a medical examination, to get some sort of rest and relaxation. An atmosphere of reassurance should characterize the whole environment. The guiding principle should be to evacuate as few cases as possible. It would be socially disadvantageous if the first-aid posts or clearing stations came to be regarded as a means of getting an easy ride into the country or to a safety zone, and in this case he thought their social duty outweighed their medical. Their work was to get people to return to their homes or duty if at all possible, and only to evacuate those who were so sick that it would not be safe or wise for them to remain in town or go home.

When they began to take the history of these cases—if they had any chance to do so—they would probably find that many of them were people who had been unstable for years, very likely former patients of a clinic or hospital, and quite unfitted to stand up to the strain of aerial bombardment. But a great many cases would be found in which the method of abreaction would prove of value. It would be useful to get them to talk out the situation. One would suggest to them in the first place that fear was not a thing of which they should be ashamed. The method of persuasion might remove very quickly the conversion hysteria symptom, particularly if it had just begun. The immediate problem, at all events, might be solved in that way.

Suggestion Treatment

The method of persuasion, however, was only for the removal of the symptom; the method of suggestion went more deeply, below the level of consciousness, where the cause lay. Then there were analytical methods of various kinds, which were hardly emergency methods to use in dealing with psychoneurotic breakdown. Peace-time experience showed that the person who had lost himself for the time being or came in mildly confused or dissociated was likely to respond easily to suggestion. It was not necessary to learn the methods of hypnosis—though they were very easy to learn—in order to give the patient a great deal of positive suggestion, directed to his deeper anxieties, and making a fundamental difference in his outlook. Suggestion treatment should aim also at making a man feel that he was one of a group, not separated from it by the fact of these symptoms.

Collective suggestion or hypnosis might well prove of great value, the people being warm and comfortable, and for the moment reassured; in such circumstances it might well be possible to inspire a more confident attitude towards the problems and the difficulties and dangers they had to meet. There was nothing mysterious about the method of suggestion, it was perfectly scientific, those who practised it need not fear the charge of charlatanry, it was a method of reinforcing the positive influences in the patient's outlook.

Having helped some of the people in this way, and sent them back home, it was important to be able to tell them that they could return if they wanted and receive further help. The mere fact that they knew they could return to the same man who had been interested in them meant probably that they would not need to do so. It was a relief to the anxious patient to know that he could return to the same doctor; it enabled him to carry on, it had something like the value of an insurance policy.

The majority of the anxiety cases, he believed, would need to be evacuated, though perhaps not always on the first day. It was worth while to try a little explanation, to give sedatives, and, if at all possible, to get the people back to their homes and jobs. But ultimately the severe anxiety case could not possibly get well within sound of bombs and anti-aircraft guns. The hysterics would be easier, on the whole, to deal with in those conditions.

In conclusion Dr. Rees returned to the point that it was the general attitude of those who treated these people which mattered at least as much as any specific line of therapy they might feel called upon to employ. With some of these patients sedatives would be necessary, with some the abreactive or "psycho-cathartic" method, some would need general treatment, some would require evacuation, but it was the general attitude of doctors, nurses, and orderlies which was so important. It should be sane, calm, cheerful, encouraging. Occupation, again, was one of the best means of prophylaxis against anxiety, and if possible the anxious, frightened, neurotic patient should be given

a sense of adventure in his experiences. That might seem very difficult in the case of the shaking, perspiring "wind-up," but experience had shown that it was not beyond achievement.

The six lectures at the Tavistock Clinic have been attended by large audiences, and many expressions of appreciation of the course were heard at the close.

Reports of Societies

ANOREXIA NERVOSA

A meeting of the Section of Medicine of the Royal Society of Medicine was held on January 24, Dr. H. LETHEBY TIDY presiding, when a discussion took place on anorexia nervosa.

Professor J. A. RYLE spoke of a revival of interest in anorexia nervosa in recent years, accompanying perhaps an increase in the incidence of the disease, but more probably due to its wider recognition and an extended appreciation of the importance of its psycho-somatic relationships. No subsequent descriptions had displaced those of Gull or essentially altered his views on pathogenesis and treatment. Professor Ryle's personal observations included sixty-three private cases, and in these 90 per cent. were in female subjects, most of them girls and unmarried women below the age of 30. The majority of the patients might be classified as psychoneurotic; some were psychotic. The aetiological factors included emotional disturbances bringing in the affections, slimming in response to teasing, an unhappy home life, overwork and examinations, and convalescence from a physical illness. Perpetuating factors might be a morbid enjoyment of the illness itself or the interest and concern which it created, also lack of a diagnosis and inappropriate treatment resulting therefrom. The condition appeared to occur often among girls sent to finishing schools on the Continent. Among older patients menopausal ill-health more often provided a background for the malady.

The clinical picture of anorexia nervosa included the general effects of starvation with amenorrhoea, slow pulse, low blood pressure, hirsuties, and temperamental changes. The loss of weight might be extreme. The maximum loss in his observed cases was 4 stone, the weight being practically halved. In contrast with these physical findings there was rarely any evidence of anaemia or vitamin deficiency, and there was a degree of activity of mind and body which might have been thought impossible in the presence of such emaciation. The prognosis was very good provided diagnosis was not unduly delayed. Approximately half his own cases did quite well with home treatment. In cases of long standing the treatment was less easy and the prognosis less favourable. Treatment included a full mixed dietary, rest in bed at first, and preferably removal from the parental sphere. He had seen no reason to use insulin or any endocrine preparation, or parenteral vitamin medication, except in those rare cases in which the physical condition was grave and signs of avitaminosis were present.

Contrasting Aetiological Views

Dr. J. H. SHELDON said that the discussion was well timed because there was a considerable ferment of opinion on this subject going on in Continental and American writings, and it was important to try to correlate what appeared to be quite sharply contrasted points of view. The English position lay entirely within the original framework of ideas provided by Sir William Gull; the essential tenet of that tradition was that the loss of appetite or refusal to eat arose in response to what Gull himself called a morbid mental state. In the speaker's judgment no account of the disease could be even remotely adequate which failed to take into account the mental background that lay behind the clinical features presented by the patient. The English tradition had always regarded those clinical features as being the direct and simple result of starvation. No one had ever posed the question as to how or why it was that starvation produced the results. In roughly one-third to one-half of the reported cases the amenorrhoea arose late in the disease; in others it occurred far too early to be regarded as the result of starvation. It might arise at the same time as the anorexia or even before it. He thought the amenorrhoea in anorexia nervosa where it occurred early might be regarded as an amenorrhoea nervosa. He was satisfied from his own observation that in a proportion of the cases occurring at puberty—somewhere about 30 or 40 per cent.—there was evidence of a previous failure of growth.

The physical features of the established disease must be considered in the light of contemporary American and German literature, in which nowadays cases were misreported under the headings of Simmonds's disease. A number of these observers abroad had rediscovered the disease under various titles, usually attributing it to anterior pituitary insufficiency. The problem of the physical aspects of the disease was to integrate this way of looking at things abroad with the traditional English point of view. Starvation, anorexia nervosa, and Simmonds's disease had a large number of clinical features in common. The best way of explaining this fact appeared to be that the features of starvation were not a series of haphazard peripheral effects, but formed part of a co-ordinated mechanism, possibly hypothalamic, the main feature of which was a diminution of anterior pituitary activity. This made these three conditions simulate each other closely. They differed, however, as to the changes in the hair, where, especially as regards hirsuties, anorexia nervosa closely followed starvation. For the early onset of amenorrhoea in many cases one must postulate a failure of hormone output from the anterior pituitary, due to nervous influences. Anorexia nervosa arose in response to an emotional or mental need. The lowered food intake set in motion a series of changes which were mediated to the body by means of a diminished anterior pituitary activity. This accounted for the general acceptance of these cases abroad as instances of Simmonds's disease.

The Endocrine Aspect

Dr. A. W. SPENCE said that anorexia nervosa presented various problems of interest to the endocrinologist. He did not consider it to be primarily a disease of the endocrine system. The initial disturbance was psychological, the manifestations of endocrine dysfunction being purely secondary. These might be so prominent as to lead to the condition being mistaken for Simmonds's disease. Indeed, he was informed that in Germany the term "anorexia nervosa" was not recognized. In looking through the literature he had found a large number of cases labelled pituitary emaciation which in his opinion would have been more correctly diagnosed as anorexia nervosa. The differentiation between the two conditions rested mainly on the initial psychological factor which was responsible for the loss of appetite. As menstruation was dependent on the delicate balance of ovarian hormones the secretion of which was controlled by the anterior pituitary, amenorrhoea in the presence of a general debilitated condition such as anaemia was necessarily of endocrine origin, but in anorexia nervosa the endocrine origin was not necessarily primary. There was anatomical evidence that nerve fibres passed from centres in the hypothalamus to the pituitary, and it was suggested that the secretion of pituitary hormones was a response to stimuli from those centres. There was no reason why amenorrhoea should not precede anorexia nervosa as a symptom of the disturbance of the higher centres.

After the anorexia nervosa had been established he felt that the endocrine features might be explained in terms of vitamin deficiency. The likely cause might be a deficient intake of vitamin E, which, with the disturbance of the higher centres inhibiting the outflow of impulses from centres in the hypothalamus controlling pituitary secretion, resulted in impairment of anterior pituitary function and diminished capacity of the thyroid and ovaries to respond to stimulation. For this reason the administration of full doses of vitamins, especially vitamin E, might have a beneficial effect on the endocrine features of the disorder. Hormone treatment, in his experience, had been disappointing. A remarkable feature was that these patients never demonstrated the more severe nutritional disorders, such as scurvy or beriberi.

Sir ARTHUR HURST said that there was no distinction between the common anorexia nervosa as it occurred in males and in females. It was true that there was nothing corresponding in the male to amenorrhoea in women, but otherwise the condition appeared to be exactly the same. Anorexia had nothing to do with Simmonds's disease. All the symptoms were due either to purely psychological factors or to starvation. It was important that this should be understood, because since this question of Simmonds's disease arose cases of anorexia nervosa had been worse treated. As for treatment, although the condition was psychological in origin, if the patients were treated by modern psychological methods they did badly; what they wanted was very superficial psychological treatment. So far as prognosis was concerned, if they were properly treated they ought not to die. He did not think they need worry about vitamins or endocrine preparations of any kind. These patients should be encouraged to eat ordinary food, and with persuasion and firmness they could be made to settle down within a few days to an ordinary full diet.

Dr. T. A. ROSS agreed that it was most important that treatment should be by ordinary food. There should be no special physical treatment of any neuroses. He had expressed the view that the manifestation in males was of a different character from that in females, but he had seen only two or three male patients, and they were all severe cases. He admitted therefore that his negative experience was of no value compared with Professor Ryle's, and he withdrew his previous opinion.

Loss of Appetite

Dr. S. W. PATTERSON (Ruthin Castle) said that in a series of 273 patients in whom the main or a prominent symptom was loss of appetite it was found that organic disease of the stomach accounted for one-quarter. In one out of every eight of the patients reviewed the appetite was much diminished reflexly from disease elsewhere in the alimentary tract. The largest group, just under one-half, consisted of toxic, infective, and general states, and in an endocrine group of ten cases seven related to the thyroid; two of these were of myxoedema, one was of goitre pressing on the trachea, and four were of Graves's disease. All did well on treatment, the first two with thyroid extract, the others with the surgical removal of the excess of gland substance. Nervous factors accounted for one-fourth of the cases, and anorexia nervosa was recognized in nine patients of the series. He quoted some of the cases in illustration. Very few of the cases were in his experience endocrine in origin. In most cases institutional treatment was advisable. The essential treatment was by improving the nutrition, which might be done by reducing the expenditure of energy—these patients were usually ceaselessly active and should be rested in bed with mild sedatives at first—and by increasing the diet, giving small frequent meals of concentrated foods. In all the "nervous" groups the psychological aspect must be taken into account. When the condition was brought about by strain, rest and relief from work might be enough, but the rest had to be promoted by sympathy and sedatives; in the group with anxiety much reassurance was needed, and in the true anorexia nervosa, during the stage which was almost mental, firm but kindly discipline was required.

General Discussion

Dr. MARGARET LOWENFELD spoke from her experience of girls of between 17 and 20 with this condition. They seemed to have, underlying their emotional relation to their mothers and their environment, a profounder difficulty in regard to their own bodies—a feeling that the body was in itself disgusting, and that it was particularly wrong to take pleasure in the indulgence of the appetite.

Dr. HENRY YELLOWLEES said that a large proportion of the cases described as anorexia nervosa were obviously only one of the many manifestations of what might be called hysteria. He thought that the openers might well be asked for a little more detail as to the way in which they proposed to deal with this psychological factor. In a great many cases the refusal of food should not be called anorexia nervosa at all, but one of the symptoms of a psychosis. The difference in the appearances following starvation for therapeutic purposes, which was now so common, starvation in anorexia nervosa, and starvation in famine was worthy of investigation and attention. He knew that many people had for a considerable period gone with definitely less intake of every substance than the patient suffering from characteristic anorexia nervosa and showed less effect, and he wanted to know why.

Dr. H. A. PALMER said that if these people were hysterics, then it was surely right to treat them for that as well as for this single symptom. One point almost diagnostic in these patients was the facial expression. They had a characteristic look of revulsion about their lips, as if they had some loathsome food placed in front of them.

Dr. H. LETHEBY TIDY, from the chair, said he thought it was agreed that anorexia nervosa and Simmonds's disease were different entities. It was also agreed that there was a psychological aspect, and, again, that the particular trouble which arose was due to lack of food. A very high proportion of these cases showed failure in growth. He suggested the possibility that amenorrhoea itself might be the factor which led to the anorexia nervosa. He had seen cases in which the amenorrhoea came first. The question of psychological treatment was a different matter. The initial refusal to eat and consequent diminution of intake led to a lack of appetite, and if there was no appetite there was no good digestion to wait upon it. Occasionally cases were seen of people who had actually been unable to obtain food, and nearly all of them—perhaps all—had symptoms of scurvy; but scurvy occurred rarely in anorexia nervosa, at any rate until the terminal stage. It must be borne in mind that people who were starving because of their economic state were likely to be living perhaps on a single item of diet or on a few items, whereas anorexia nervosa was starvation in the midst of plenty—in other words, what these people did take, although insufficient, was likely to be an ordinary mixed diet. That, he believed, was the reason why avitaminosis was so rare in anorexia nervosa. The starvation of anorexia nervosa was not comparable with the starvation of famine. The prognosis in this condition was good, even if no particular note were taken of the psychological aspect.

Dr. PARKES WEBER was astonished at those who had insisted on what amounted to psycho-analysis in these cases. In the face of a disease of this kind it was "almost criminal" to waste time in elaborate psycho-analytical examination.

Professor RYLE, in the course of his reply, asked for a show of hands of those who had seen an indisputable case of Simmonds's disease. In a meeting of about sixty members seven hands were held up, and four replied in the affirmative to the further question whether the finding had been confirmed by post-mortem examination. Professor Ryle said that the best answer to the psychiatrists was that the criterion of treatment was the completeness of the recovery, and in the vast majority of cases of anorexia nervosa there was complete recovery by simple methods of treatment.

SCHOOL EPIDEMICS OF POLIOMYELITIS

In the Section of Epidemiology and State Medicine of the Royal Society of Medicine on January 27, with Dr. J. A. H. BRINCKER presiding, a discussion took place on epidemiological problems of poliomyelitis in schools.

Dr. R. E. SMITH of Rugby School said that a recent increase in reported cases made the present a proper time for frank discussion. A large increase was recorded in 1937, and a larger in 1938. He did not know whether the rise was due to the notification of aborted as well as declared cases, but if it was it would be better to have the two types of cases discriminated on the notification form. Dr. Smith related in detail some of the major school epidemics in recent years. He ascribed the panic in the lay mind on this subject to the non-existence or negative value of immunological measures and the lack of knowledge of the life history of the virus. The general consensus of opinion was that serum was of no value for established cases. The evidence was also against its usefulness as a prophylactic for contacts. Several cases which had been actively "immunized" with a vaccine of the virus had developed poliomyelitis shortly after inoculation. He gave statistics from the Los Angeles County Hospital in 1934, when, in the presence of an infection, 228 persons working in the communicable diseases department of the hospital received serum, of whom thirty-two, or 14 per cent., developed poliomyelitis, while of 261 other persons working in the same department who did not receive serum, only twenty-five, or 9.7 per cent., developed the disease.

As for the policy of school closure, school authorities must in all fairness tell parents when a case of poliomyelitis broke out, also that there was no specific treatment, that active immunity was fraught with risk and passive immunity of questionable value. At the same time, parents should be told that localized cases were extremely common, and that epidemics, although when they occurred they were alarming, were nevertheless rare (though this statement might have to be modified in view of recent outbreaks). On the appearance of the first case they were justified in advising parents to leave their boys at school unless and until there was a second case. No school should force parents to take their children home, nor, on the other hand, could schools refuse to allow parents to do so. If children were removed from school in such circumstances they should be in quarantine for the recognized period of fourteen days from the last contact.

Contact Infection

Dr. G. O. BARBER gave an account of the recent occurrence of four cases at a boys' boarding school in Essex, the subject of an article by him in the *British Medical Journal* of December 3, 1938 (p. 1137). The school in question, he said, was unfortunate in that the epidemic arose at the beginning of the "silly season," with the result that as a headline "Infantile Paralysis at a Public School" competed with headlines relating to the international situation. Parents were alarmed by terrifying accounts in the newspapers. Somehow the school doctor had to be reassuring and at the same time very careful to be not too reassuring, so that, in the event of further cases, he might not be blamed for having minimized the danger. The Ministry of Health had drawn up an excellent code of procedure with regard to quarantine. One sentence ran: "In regard to closure of residential schools the policy of advantage is in favour of not closing the schools on the appearance of poliomyelitis. If the school be closed any potential infection is more widely distributed, not infrequently in homes containing young children." If the children were removed by the parent very definite instructions must be given that a full quarantine period be kept. Dr. Barber read two letters which were sent to parents on the outbreak of poliomyelitis in the boarding school mentioned: one to the parents of boys in the house in which the case had occurred, and the other, rather different in its advice or in its emphasis, to the parents of boys in the other houses. Schools in which there was a day-school population as well as boarders were in a specially difficult position. But, after all, in the conditions of modern life, with the great use of public vehicles, with attendance at cinemas, with extreme crowding and wide scattering, there was bound to be contact. It was the easiest thing in the world to find a common factor as between any two individuals in a locality in which the disease had appeared, but at the same time one had to bear in mind the innumerable contacts with other persons among whom the disease had not appeared. One had to assume such a high degree of immunity as to put the epidemic out of account for some time, and yet when the epidemic did die out at the end of one autumn it cropped up the following summer with, apparently, no further immunity developed among a large number of people.

School Closure and Home Quarantine

Dr. JOHN LAMBERT described a recent outbreak in a public school with a population of 670 boys. Of this number 450 were in the central college bulding, and the others in five separate houses outside. No boy in an outside house developed the disease. During August and September there were some six cases in the neighbouring village and about another six in the surrounding rural area. A circular was sent to the parents of the boys stating that there were cases in the district and that the whole district was being put out of bounds. The first case in the college did not occur until December 15, and within the next day or two there were two further cases. A circular was sent to parents when there were two cases, saying that the boys would be kept back for a day or so after the approaching end of term. During the next few days nearly all the parents took their boys away, and only thirty were left on the official day for closing. From December 15 to 28, in addition to five cases which had developed in the school, there were fifteen—some of them undoubtedly of an abortive type and others very mild—reported among the boys who went home and became ill there. The epidemic as a whole was mild, but one boy who went home died of respiratory paralysis. How far the cases in the school were connected with the earlier cases outside could not be stated. It was known that certainly two of the cases which developed in the district had some contact with one of the school houses, but no boy in that house or in the other separate houses got the infection. The peculiar difficulty of the school medical officer was to know what to do in the case of an outbreak almost at the end of term.

Dr. R. P. GAMMIE described a small outbreak at a public school in Essex. In the autumn of last year an undue prevalence of stuffy colds was noticed. The first suspected case of poliomyelitis was discovered on November 13, and the diagnosis was confirmed. The affected house was isolated, and, the college including both boarders and day boys, the day boys' school, was isolated completely from the rest of the building. The parents were notified on the occurrence of the first case, but were advised not to remove their children. On the appearance of a second case, however, they were further notified, and the onus of decision as to whether their children should be taken away was placed on them, but the need for precautions as to transport and isolation at home was emphasized. After the first two cases a number of parents wrote that they had consulted their own doctors, who had advised them to leave the boys at school, for the perfectly honest reason that they, the doctors, had never seen a case of poliomyelitis and were quite sure the school doctor would understand it better than they did.

Dr. REGINALD MILLER spoke as a consulting paediatrician who had been asked to advise parents what to do when their children were at a school at which there was

an outbreak. When they talked about "isolating" children at a private school they were not isolating them at all, but at the very best only segregating them, and although so far the epidemics had not gone on to three or four groups of cases, that was a possibility. In his experience the parents who were most frightened were medical people rather than lay. It was all very well for school doctors to say that parents should be allowed to remove their children. They had a perfect right to remove their children as quickly as they liked. But the child if removed should be isolated on reaching home. The medical officer of health might be informed, though he had never found notification to be a therapeutic procedure of any great potency. There was one question which should be definitely answered: it would settle the whole matter, and the facts must be within the knowledge of the public health authorities. Many schools had been disbanded on the appearance of epidemic poliomyelitis. What harm had come of it? After all, poliomyelitis was a notifiable disease, and if it was really a dangerous procedure to disband the schools this should be indicated by the figures, which must be known to someone in authority.

The proceedings of the Section were suspended that members might listen to the broadcast by Mr. H. S. Souttar on the report of the Earl of Athlone's Committee on Nursing Services. In some further brief discussion Dr. H. M. RAVEN referred to the Broadstairs epidemic in 1926. He was convinced that the cause of that epidemic was the contamination by flies of fruit exposed for sale in the town. Dr. MAURICE MITMAN discussed age in relation to infection. Poliomyelitis occurred in younger patients and polio-encephalitis in older ones. He thought the possibility should be considered that polio-encephalitis was more likely to follow an inhalation infection and poliomyelitis an ingestion infection. Dr. F. E. CAMPS thought that many of the cases which were described as aborted had meningeal symptoms.

BIOLOGICAL STANDARDIZATION OF THERAPEUTIC SUBSTANCES

At a joint meeting of the Manchester Medical and Pathological Societies on January 11 Dr. P. HARTLEY read a paper on the biological standardization of therapeutic substances.

Dr. Hartley said that there were now available for use in the practice of medicine a large number of therapeutic substances which, though varying widely in their origin and properties, possessed one common feature—their potency and purity could not be adequately determined by chemical means, and therefore biological methods had had to be devised for their standardization and assay. The group comprised antitoxins and antisera, diagnostic agents like tuberculin and Schick test toxin, insulin, pituitary preparations, the arsphenamines, the vitamins, the drugs affecting the heart, and the sex hormones. The great majority of these substances had been introduced in relatively recent times as the result of research, much of it of a co-operative nature in many different fields of scientific activity, and, with the advance of knowledge, new remedies of this class were constantly being added to the group. The need for accurate standardization of therapeutic substances of this class was emphasized. They possessed specific biological properties, and were used for the specific treatment of disease. Some of them were potentially dangerous, and, in many cases, for their safe and effective use they had to be administered by precise dosage. Many of them were given by injection, and the preparations accordingly had to be sterile.

Comparative Assays

In devising methods for the standardization of these therapeutic substances, the specific biological property which each possessed was utilized. Potency could not be determined, however, merely by observing the effects produced on an animal, and examples were given of the fallacies and errors ensuing from attempts to determine potency in terms of animal reactions. The activity of a sample of unknown potency could be estimated and expressed in relation to another sample the potency of which was known. Methods of biological assay were essentially comparative, the problem in each case resolving itself into the determination of the quantity of the sample of unknown potency which produced the same biological effect as a known quantity of a standard preparation under strictly comparable conditions of testing. Sometimes standardization had a relatively limited objective—namely, ensuring that samples provided for use in medicine were of the same potency as the standard preparation. In the majority of cases, however, potency was measured and expressed in units, and the unit was properly defined not in terms of an animal reaction but in terms of the standard preparation. Generally speaking, the unit of activity was defined as the specific biological activity contained in a certain weight of the standard preparation. The question of variation in animal response, and the bearing of this factor on the precision of biological assays, was discussed.

A material requisite for the conduct of a biological assay was a standard preparation in terms of which the potency of other samples of a product could be determined. These standards, and the units defined in terms of them, had been provided for international use as the result of the work of the Permanent Commission on Biological Standardization of the Health Organization of the League of Nations. Up to the present time thirty-two such international biological standards had been provided by the Commission. The procedure followed by the Commission in establishing standards and units was described. The standards were freely available for the use of laboratories, institutes, and research workers in all countries, and the mechanism provided for their supply was outlined; the advantages which have followed the international adoption of a uniform system of standards, units, and notation were pointed out. The manner in which international standards were employed for the determination of potency was illustrated by a description of methods in common use for the biological assay of tuberculin, neoarsphenamine, insulin, extracts of the posterior lobe of the pituitary body, vitamin D, and diphtheria and tetanus antitoxins. A brief account was also given of biological standardization in relation to the Therapeutic Substances Act, 1925, and the *British Pharmacopoeia*, both being especially concerned with the quality, purity, and potency of therapeutic substances provided for use in the United Kingdom and the oversea Dominions.

Local News

ENGLAND AND WALES

New Maternity Unit at Bradford

At the opening on January 26 of the new maternity unit of St. Luke's Hospital, Bradford, Sir Comyns Berkeley, chairman of the Central Midwives Board, said that having inspected leading maternity hospitals and units in this country and in many parts of Europe and America, and having thus some experience of the standard of building and equipment to be found in most up-to-date hospitals, he could congratulate Bradford on having erected a building which entirely filled those desiderata. He was not surprised that the corporation, in pursuance of its high ideals, had erected a maternity unit which must be second to none. In 1915 Bradford was the first local authority to open a maternity hospital; in the following year it was the first to introduce the system of municipal midwives; and about that time it was the first to institute a municipal general hospital. Moreover, not satisfied with such progressive achievements, it decided that every

patient in this hospital should be under the care of a consulting physician or surgeon, and it elected to the medical staff of the hospital members of the honorary medical staff of the Bradford Royal Infirmary. Sir Comyns drew attention to some important features of the new unit and its administration—for example, the separation from the rest of the building, except for a communicating corridor, of the out-patient ante-natal and post-natal department; the decision that each patient after her confinement should be kept in a single-bedded room for one week, thus guarding against the possibility of infection to other patients; and the decision that only those women who had attended the out-patient ante-natal department regularly during pregnancy should be admitted to the unit, a procedure which would result in a further improvement in the ante-natal supervision of the city. Altogether, continued Sir Comyns, there would be 153 maternity beds in St. Luke's Hospital, and emergencies in the case of patients who had had only perfunctory ante-natal supervision would be admitted to the maternity wards of the General Hospital, thus ensuring the safety of the patients in the new maternity unit. He pleaded for the proper recognition of workers in the health services, especially midwives. The foundation of the maternity service in this country, he said, was the midwife, and the efficiency of the midwifery service depended on an adequate supply of midwives. Inevitably the improvements which had been introduced in the midwifery service would cause difficulties to those responsible for organizing and financing maternity hospitals, etc., but he hoped that means would not be adopted which, while perhaps easing such difficulties temporarily, would prove, in the long run, to be retrograde. It would be retrograde if women were encouraged to participate in maternity nursing after receiving a much shorter and less complete training than had hitherto been customary.

Planning for Health

A group of Paddington residents held a Press reception at the Housing Centre, Suffolk Street, on January 26, in order to discuss the decision of the Paddington Borough Council to re-plan and rebuild an area on the north side of the Harrow Road, a scheme estimated to cost over £500,000 and to cover about 14¾ acres. Protest was made against the borough council's decision not to put the scheme in the hands of an architect but to leave it to the borough engineer's department. In a memorandum a group of the residents draw attention to the health aspects of the problem, and state that defects of architectural design may throw a heavy burden on the housewife, such as the position of taps and coppers, which involve unnecessary lifting of buckets. The memorandum states: "When it is remembered, for instance, that scientific planning in a kitchen can result in a saving of 640 lb. of weight-lifting per day and a saving of a third of a mile in walking about the kitchen, it can be understood how important these small details can become." Bad planning, which results in irritation and exhaustion, means ill-health. From the point of view of public health, then, it would appear that the residents' demand for the employment of a first-class architect with a specialist's experience of working-class housing is a reasonable one.

Conference of London Voluntary Hospitals and L.C.C.

A conference was held at the Ministry of Health on January 27, under the chairmanship of Sir George Chrystal, to consider certain questions affecting the voluntary hospitals in London. It had been arranged at the suggestion of the King Edward Hospital Fund and the Voluntary Hospitals Committee for the County of London, and the following were present: Sir George Chrystal, Permanent Secretary to the Ministry of Health (in the chair); Lord Dawson, Lord Luke, Sir Harold Wernher, Sir Ernest Pooley, Mr. Maynard (King Edward's Hospital Fund); Mr. Chadwyck Healey, Mr. Ives, Dr. A. M. H. Gray (Voluntary Hospitals Committee); Mr. Herbert Morrison, Dr. Somerville Hastings, Dame Barrie Lambert, Sir Harold Webbe, Sir George Gater, Sir Frederick Menzies, Miss Rickards, Mr. Douglas, Mr. Wood (London County Council); and Mr. H. L. Eason (London University). A general discussion took place, at the conclusion of which the representatives present undertook to report back to their constituent bodies, and to give further consideration to the various matters which had been raised, in the light of the proceedings at the conference.

IRELAND

Northern Ireland Factories Act

The new Factories Act, which was passed in the last session of the Northern Ireland Parliament, makes provision for better lighting conditions for the employed—a matter on which the United Kingdom has lagged behind many other countries which have enforced minimum standards of illumination for some years. Safety laws will be more stringent in an endeavour to reduce the number of fatal factory accidents. It is provided that the manufacturers or sellers of machinery must have adequate protection of dangerous parts before handing the machinery over to the purchaser. The hours of workers also receive consideration, as it is felt that they have an important effect upon the health and efficiency of the employed. Women and young people must not be employed for more than forty-eight hours a week; the daily limit is fixed at nine hours, and the period within which employment is permissible is to be eleven hours between 7 a.m. and 6 p.m. for those under 16 and 8 p.m. for others. As against this regulation, however, the employer is allowed more latitude in making provision for the convenience of his business and the interest of the workpeople.

Belfast Tuberculosis Scheme

The rebuilding of the Belfast municipal sanatorium has occupied the interest and attention of the Belfast corporation for several months past. It has been decided to build a new sanatorium on a site elsewhere than the existing one at Whiteabbey, beginning with a children's hospital at a cost of £200,000. Many sites have been under the consideration of the Tuberculosis Committee without a final decision having been arrived at. One aspect of the question has not, however, received the consideration to which it is entitled. The report on local services presented by the Departmental Commission presided over by the late Sir Robert Johnstone advised a co-ordinated scheme for the treatment of tuberculosis in Northern Ireland as a whole, instead of by the individual efforts of county and county borough councils. This view is supported by the medical profession, as proved by representative statements from the various Divisions of the British Medical Association in Northern Ireland, as ascertained recently. Consequently a letter was addressed to the Minister of Home Affairs by the Northern Ireland Branch pointing out that the opinion of the medical profession was that this was an opportunity to achieve one of the recommendations of the Departmental Commission. There was unanimity, the Minister was informed, in favour of a comprehensive scheme which would co-ordinate the services that might be made available to patients suffering from all forms of tuberculosis, and there was a very strong feeling that a large sanatorium should be established within easy reach of Belfast which would be equipped in accordance with modern ideas and would serve the whole of Northern Ireland. Unfortunately, in spite of a well-known existing offer on the part of the Branch to co-operate with local authorities in matters of medical interest, no approach was made by the Belfast corporation to ascertain the views of the profession as represented by the British Medical Association. Hence it became necessary for the Branch to express its opinion

to the Minister directly, since when a letter has been received by the Tuberculosis Committee suggesting that a wider scheme should be considered and that a conference with county councils should be held. The series of articles which appeared in the *Belfast Telegraph* recently on medical subjects (which were sponsored by the Northern Ireland Branch of the Association) indicated to the public the many unsatisfactory features of local health services. It is to be hoped that the present difficulty will be solved in a manner reflecting the considered opinion of the medical profession and in keeping with the wider aspects of the problem of tuberculosis.

Vice-Chancellor, Queen's University, Belfast

The Senate of Queen's University has appointed Mr. David Lindsay Keir, M.A., to be President and Vice-Chancellor in succession to Mr. F. W. Ogilvie, now Director-General of the B.B.C. Mr. Keir is a graduate of Glasgow and of New College, Oxford, and has held the position of Dean and Estates Bursar of University College, Oxford, and University Lecturer in English Constitutional History. It is hoped that Mr. Keir will take up his new post in Belfast after Easter.

Correspondence

Otitis Media in Schools

SIR,—The term which has recently begun is the one in which each year the numerous types of haemolytic streptococci and pneumococci find their happy hunting ground in boarding schools, and especially in those of the preparatory type, for either boys or girls. Epidemics of various kinds become rife, and even those which seem relatively trivial may bring in their train such serious complications as pneumonia and otitis media.

Otitis media is dreaded by school medical officers, and, indeed, can be regarded as in itself an infectious disease which may assume an epidemic form.

"It has been known to spread all down one side of a ward of a school sanatorium filled with boys convalescent from measles. An attack rate of otitis media of 15 per cent. of all the boys in a large preparatory school has been observed during a measles epidemic, and two instances, one in a public and one in a preparatory school, are known where, in the absence of measles or scarlet fever, 9 per cent. of all the boys in the school were attacked in a single term. A patient with otorrhoea may originate an epidemic of streptococcal infection such as scarlet fever."

This quotation is from the recently issued report of the Board of Education Committee, *Children with Defective Hearing* (Chapter II).

The dangerous nature of the complications of acute otitis media is so familiar as to need no description, but what is perhaps far less generally realized is the leading part played by acute and chronic otitis media in the production of deafness of all degrees in later life. Thus, in a study of 3,040 cases of *acquired* deafness serious enough to demand education in special schools, McLeod Yearsley (1906–21) found that 73 per cent. were due to otitis media, and Kerridge in 1934 found that of 456 cases of the same nature in the L.C.C. special schools the figure was 62 per cent. As to the frequency of deafness in ordinary schools, Dr. Kerridge in a personal communication says that of 5,000 elementary school children examined by her in average industrial areas 10 per cent. showed signs of slight to moderate middle-ear deafness. The figure, she says, is lower in private schools for the children of the middle and upper classes, but may reach 20 per cent. in elementary schools in depressed areas.

A striking fact in the aetiology of acute otitis media in children which should be more widely known is that *about two-thirds of the cases are due to the haemolytic streptococcus and one-third to the pneumococcus.* In fact these two organisms are almost entirely responsible for the disease.

Sulphonamide preparations have doubtless been widely used in its treatment and with benefit, but since Whitby published his paper (*Lancet*, May 28, 1938) on the new compound 2(*p*-amino-benzenesulphonamide)-pyridine, more usually known as M & B 693, it has become obvious that the chemists have put into our hands a weapon, equally potent against both of these causative organisms, which should therefore give us the power if not to abolish the disease entirely at least greatly to reduce its incidence. The drug is the more effective the earlier it is used, and it is clearly unnecessary to wait for a bacteriological examination before deciding to give it. Probably the most suitable moment would be *at the onset of an earache*, and certainly it should not be withheld after the tympanic membrane shows the slightest sign of redness in any part. The teaching and nursing staff should be on the alert for any complaint of earache from any source and the school medical officer informed at once. The drug should never be given without a clear order from him and without the usual precautions for sulphonamide compounds. To avoid loss of valuable time a stock of the tablets should be available for his immediate use.

If these measures are carried out they may save the rising generation from much present and future trouble and perhaps rob the Lent term of some of its terrors for parents, masters, and school doctors. Furthermore, if the number of schools in which it is systematically used is large the results, if properly recorded, should be of great help in assessing the new drug at its true clinical value.

Medical officers who can find time to make brief notes on their cases can contribute very materially to this result if they will send them at the end of term to the Honorary Director of Research, Ferens Institute of Otology, Middlesex Hospital, London, W.1, for correlation with those from other schools.—I am, etc.,

London, W.1, Jan. 24. F. J. CLEMINSON.

*** An annotation on this subject appears at page 223. —ED., *B.M.J.*

Blood Transfusion in Obstetrics

SIR,—I have read Mr. John Stallworthy's plea for the freer use of blood transfusion in obstetrics (*Journal*, January 28, p. 153) and note his criticism of Dr. Bethel Solomons's warning against the immediate resort to transfusion in conditions of extreme shock, such as ruptured ectopic pregnancy. After an experience now running to 14,000 confinements in which I have held responsibility for management or the making of ultimate decisions, I would make the following unequivocal statement.

I would prefer the availability of submammary or rectal saline for my cases of shock to any method of intravenous therapy, whether by saline or blood transfusion. If a woman has a moderate loss of blood—1 to 1½ pints—she will respond quickly to removal of the placenta alone. This recovery may be hastened by replacement of fluid per rectum and the exhibition of ephedrine grain ½. If a woman has a major loss of blood in excess of 2 pints the replacement of the blood prior to removal of the placenta is a highly dangerous procedure and likely to hasten death. Following the removal of the placenta,

no matter how dire the condition, most women will recover from the depths of shock. Attempts to transfuse are likely to retard this initial recovery. Once recovery has asserted itself transfusion can be of benefit. To have transfused a deeply shocked patient who dies within hours is comforting in the sense that everything possible has been done. Nevertheless the transfusion may have killed the patient.

The production of statistics relative to the benefits of transfusion may be highly misleading since nearly all would have recovered without. Among the actual mortalities transfused immediately I venture to predict that if an exactly similar set of cases could be produced treated by replacement of fluid per rectum, together with ephedrine, the latter method would reduce the apparently inevitable mortality.

I am in no way biased against what seems logical procedure; I am only acutely aware of a danger which Dr. Solomons has expressed.—I am, etc.,

Birmingham, Jan. 28. WENTWORTH TAYLOR.

SIR,—I read with great interest Mr. John Stallworthy's plea for the freer use of blood transfusion in obstetrics (*Journal*, January 28, p. 153). It cannot be too strongly stressed that in these emergencies the immediate history and clinical condition of the patient must be the sole guide in deciding for transfusion. It is, I believe, the practice of some to set store on the haemoglobin content as an index of the need for transfusion. This, I would contend, is an error, as a sudden blood loss does not affect the haemoglobin level for some time unless the total blood volume has been diluted with fluids other than blood given intravenously. With regard to collecting the blood from a suitable donor, I have found that the flow is facilitated by introducing the French's needle away from the heart, so that the blood flows into the needle in the direction of its current and not as a backflow. The rubber tubing used is stored purposely curved so that it will lie snugly against the extensor muscle bulge and deliver the blood vertically downwards into the container of citrate solution. As to the delivery of the blood to the recipient, I have found the Rotunda syringe technique admirable, and have not yet had to cut down on a vein; a fairly fine needle is used, which has the added advantage of delivering the blood slowly at the rate of one pint an hour.—I am, etc.,

Longtown, Cumberland, Jan. 28. R. RUTHERFORD.

Intravaginal Glycerin Medication

SIR,—As Mr. W. McKim McCullagh (*Journal*, January 21, p. 110) is apparently unaware of my association with the late Dr. Remington Hobbs in varied clinical work of an experimental nature over a considerable period previous to the year at which he was a resident at the hospital (1921), he may not have realized a connexion between Dr. Hobbs's advocacy of the use of glycerin in obstetrics and gynaecology and the demonstration which I had afforded, many years previously, of the fact that diluted glycerin, more especially at body temperature, although quite non-toxic, constitutes a very efficient germicide. This statement applies not only as regards staphylococci and streptococci but also to such pathogenic micro-organisms as those of tubercle, diphtheria, and enteric fever. As indicated above, the curious and interesting fact emerged that glycerin, diluted to the extent of about 50 per cent., is far more efficient in this respect than is the pure substance. Obviously, owing to the osmotic action of glycerin, some such dilution is automatically brought about when pure glycerin is injected into the uterus or vagina, while at the same time drainage is assisted.

Realization of the germicidal effect of diluted glycerin on the various "extraneous organisms" present in crude calf vaccine rendered possible the production of a germ-free "glycerinated vaccine lymph" for the purpose of anti-small-pox inoculation—a method which has been officially utilized in this and other countries for the past forty years. But my colleagues and I soon found that to ensure the continued activity of this material for considerable periods of time it was essential to store it at a very low temperature. At anything approaching the temperature of the human body not only the adventitious organisms but also the specific virus of vaccinia itself were speedily destroyed. The very fact of this much increased germicidal action of diluted glycerin at body temperature constitutes a factor of importance when it is employed as a therapeutic agent for the purpose for which it was originally introduced by Dr. Remington Hobbs.

At the end of his note Mr. McCullagh says: "I believe that glycerin can be of great value in the treatment of wound sepsis, and regret we did not know of it and use it in the last war." Had he been aware at that time of the information obtainable from the fairly extensive literature on the subject he might have been spared this vain regret.—I am, etc.,

London, N.W.3, Jan. 21. S. MONCKTON COPEMAN.

Treatment of Sterility

SIR,—I have read with much interest Miss Margaret Moore White's article on the treatment of sterility in your issue of January 14 (p. 62). Although her series of cases is small (sixty-two), her results appear to be so good that criticism might be regarded as captious. Indeed, any line of treatment which is able to raise the incidence of success from 12 per cent. in 1936 to 35.5 per cent. in 1938 commands our close attention. These results compare very favourably with those of many American clinics, which have been for several years very thorough in their methods of investigation and treatment—for example, Hunner and Wharton treated 363 cases with 25 per cent. successes, Macomber 802 cases with 29.4 per cent. successes, Rubin 1,620 cases with 24.6 per cent. successes, and Meaker, in a smaller restricted series, had 29.7 per cent. of successes. However, certain aspects of Miss Moore White's article call for some comment.

First, it should be noted that of the twenty-two patients who became pregnant seven miscarried, and therefore to date fifteen out of sixty-two of her cases (24 per cent.) bore viable babies, the essential criterion of therapeutic success. The incidence of miscarriage is disproportionately high, both in the series as a whole and in the thirteen cases which had lipiodol injection only (four miscarriages). Secondly, as to the twenty-six patients who had lipiodol injected but no hormonal therapy and of whom thirteen conceived (50 per cent.), it would be of interest to know if any of these were given (1) advice as to the most opportune time of intercourse, or (2) advice, when discharge was present, to syringe with a solution of bicarbonate of soda, or (3) vitamin E. If so, would not the statement "50 per cent. success can be attributed to lipiodol injection alone" require modification? Again, "failure of ovulation" and "ensuring of ovulation" are mentioned, but Miss Moore White does not indicate if any attempt has been made in her series to determine if ovulation is occurring, by the simple method of endo-

metrial biopsy performed premenstrually. It is too early yet to make a definite estimate of the clinical value of the V.B. test (urinary excretion of sodium pregnandiol glucoronidate—Venning and Brown) as an indication of luteinization and presumptive ovulation. Absence of ovulation, however, will be found to account for only a small proportion of cases of sterility—in my experience of over 220 premenstrual biopsies not more than 7 per cent.

Miss Moore White's findings on the incidence of male sterility correspond with the figures obtained in many sterility clinics (21 per cent.). My own practice is to refer the husband at the earliest opportunity to Mr. W. S. Mack at the urological department of the Royal Infirmary for independent investigation, but in addition, where possible, a Huhner post-coital test is also done. This is often very informative as it may throw light on certain points: (1) failure on the husband's part to deliver sperms into the vagina; (2) sperm hostility of vaginal or cervical discharges; and (3) whether necrospermia in a condom specimen is due to the spermicidal potency of the rubber. But the main points which I think should be brought to notice are: (1) the injection of lipiodol carries a sufficient element of risk to contraindicate its use as a routine measure, and (2) kymographic insufflation is a simple procedure which can be undertaken in the out-patient or consulting room, is safer, and not only differentiates between permeability and non-permeability but indicates spasm and tubal stenosis and yields information as to the functional state of the tubes and, in certain cases, of the ovaries.

Douay and his associates have made 1,409 hysterograms, and he has come to the conclusion that not only are there dangers of lipiodol passing into uterine veins and also of pelvic abscess, but that the correct interpretation of the films is more difficult than the procedure itself. He now always employs the Rubin test first, as a routine, and lipiodol only in selected cases. Again, Rubin has made lipiodol examinations in 132 cases, all of which had insufflations, and has found sequelae following lipiodol in nine cases but none after insufflation. My own experience in the Royal Samaritan Hospital for Women amounts to a little over one hundred lipiodol examinations (only performed in selected cases), all of which were controlled by kymographic insufflation. One case developed a pelvic abscess. With the exception of two cases of pelvic sepsis, which occurred in my earlier cases after making the mistake of doing both a biopsy and insufflation at the same examination and premenstrually, I have had no complications in over 300 kymographic insufflations. As a result of unfortunate experiences with the use of iodine in oil, Titus and his associates recently undertook to develop a radio-opaque substance which would be non-irritating and also quickly absorbed and excreted. They consider their problem has been solved by the use of a mixture of mono-iodomethane sulphonate of sodium (40 per cent.) with 20 per cent. acacia. Substantiation of their claims must be awaited before the value of the new substance can be assessed.

Pregnancy often follows each of the following procedures: dilatation of the cervix, tubal insufflation, lipiodol injection, and even simple "probing" of the uterine canal, and it seems very probable that a non-specific and common factor is responsible. I prefer not to contrast deliberately the relative merits of different therapeutic procedures to the extent of undue enthusiasm for one and dismissal of another. Tubal insufflation and hysterosalpingography, for instance, are complementary measures.—I am, etc.,

Glasgow, Jan. 24. ALBERT SHARMAN.

Ulcerative Colitis

SIR,—I shall be glad of the opportunity for expressing my conviction that some form of infective agent is an essential factor in the causation of ulcerative colitis and can, I think, be demonstrated by anyone who uses a really effective intestinal antiseptic in its treatment.

The most effective intestinal antiseptic with which I am acquainted consists of a combination of 15 minims of liquor hydrarg. perchlor. and 15 minims of tinct. ferri perchlor. given with a little glycerin and half an ounce of chloroform water. If the case be a simple one and very careful dieting is not called for, all that is necessary is to limit somewhat the intake of sugar and sugar-producing food (such as starch in any form) and to give the remedy when the stomach is empty, three times daily in water fifteen or twenty minutes before food is taken. The reason for this rule is that the antiseptic action of perchloride of mercury is destroyed by combination with alkali or albumin, and as the perchloride of iron has stronger chemical affinities for such substances than are possessed by the mercurial salt the presence of the perchloride of iron enables it in the circumstances to pass through the stomach and duodenum without loss of its antiseptic properties.

In a severe case of ulcerative colitis or in a case of bacillary dysentery where no regular meals are taken the remedy is given every four hours, fifteen to twenty minutes before the giving of nourishment. In addition, more stringent dietetic measures have to be taken, and they are these: the diet must consist of the juice of a half-pound or more of raw meat in the twenty-four hours combined with the juice of a pound of fresh carrots carefully prepared. To prepare the meat juice the raw meat should be worked through a one-sixteenth-inch mesh wire sieve and then steeped in about three-quarters of a pint of water for two hours at a temperature of 120° F. and no higher. It is then strained through muslin. More albumin can be obtained from the meat by adding two drachms of liquor pancreaticus to the meat prior to its being heated. After a day or two the juice of a pound of meat may be found to be desirable in the twenty-four hours, given in divided portions. The raw carrots are treated in much the same way—first finely minced, then pounded and steeped in a pint of water for two hours at a temperature of 120° F. and then strained. This treatment proves efficacious even in severe haemorrhagic cases of ulcerative colitis.

The treatment of diverticulitis by means of the mercury and iron mixture before meals and the usual care as to diet will often be found to obviate the need for surgical interference, and persistence with this remedy for six months or a year will be found to be curative.

Further information as to the value of this remedy will be found in an article on an efficient intestinal antiseptic which I communicated to the *British Medical Journal* for February 16, 1924.—I am, etc.,

Birmingham, Jan. 30. T. STACEY WILSON.

Mechanical Respirators

SIR,—Sir Leonard Hill (January 28, p. 187) complains that I have ignored his letter in the *Journal* of December 31, 1938 (p. 1389). I did not want to indulge in polemics about the unfounded suggestions in his letter that the Drinker was the first machine of its kind, and that, from altruistic motives, it was not patented. He asserted that in justice any machine of the Drinker type should be called by that name. His further challenge in your last issue forces me to draw his attention to certain facts.

As pointed out by Dr. C. L. G. Pratt in the *Lancet* of January 28 (p. 237), a machine, the spirophore, strikingly similar in appearance and identical in principle, was produced in 1876 by Woillez. (Dr. Pratt's letter is illustrated with two photographs.) Presumably in ignorance of this, Drinker did patent his machine in the U.S.A. (Patent Nos. 1834580, 1906453, and 1906844), and in 1935 the manufacturers brought an action against Emerson for infringement of rights. This action was lost, as the district court of Massachusetts held the patents to be invalid on the ground that all their essential features had been described in publications appearing before the granting of Drinker's patents and, indeed, in at least one case, more than fifty years before. I am all the more sorry to be forced to draw attention to these facts, since they may be interpreted as reflecting on Philip Drinker's universally recognized work.

The further points raised in Sir Leonard's letter have already been fully dealt with in my letters in the *Journal* of January 14 and 28.

No one can gainsay the value of the work done by Drinker, Eve, Paul, and others in developing mechanical means of artificial respiration; but the mere existence of so many types of machine, varying so widely in principle, is sufficient to indicate, as I mentioned in my first letter, that further effort is necessary before the production of a machine which will meet with general acceptance.

It is gratifying to note that, as Lord Nuffield hoped, his gift is adequately meeting present needs and stimulating the interest of scientists in the attainment of the ideal mechanical means of combating respiratory failure.—I am, etc.,

Pembroke College, Oxford, Jan. 28. R. R. MACINTOSH.

Double Function of Ocular Muscles

SIR,—The most important part in photography is the film, and a fresh film is required for each photograph. This is accomplished in the eye by the pressure caused by the contraction of the eye muscles. If a light be attached to a scale in a dark-room and a point three feet to the right be marked with a peg, and the light be looked at with one or both eyes for one or two seconds from a distance of ten feet, and then the eyes be directed at the peg, it will be noticed that the negative after-image of the light is seen on the peg, but the positive after-image has rapidly passed it to the right. The eyes being directed towards the peg, it will be noticed that the positive after-image comes rapidly back towards the peg. The first part of the experiment I have described before, and it is evidently due to the contraction of the eye muscles pressing on the eye and moving the photo-chemical fluid, thus causing a separation of the positive and negative after-images. The second part of the experiment appears to be due to the cessation of the pressure on the eye causing the photo-chemical fluid to flow in the opposite direction. It should be noted that the pressure is in the opposite direction to the movement of the image; thus, when the pressure is to the left the image moves to the right, corresponding to the new position of the fluid in the retina.—I am, etc.,

London, N.W.2, Jan. 27. F. W. EDRIDGE-GREEN.

Physiology of the Vocal Mechanism

SIR,—Dr. Douglas Guthrie, in his article in the *Journal* of December 10, 1938 (p. 1189), speaks of the lack of information on the vocal mechanism and its disorders. May I be allowed to call attention to a book published in 1928 which does not appear in his list of references. *The Mechanics of Singing* (published by Dent), by Mr. R. A. Worthington, F.R.C.S., and myself, embodies the result of investigations made by us jointly into the vexed question of registers in the adult voice. Among the methods employed were transillumination of the larynx and *x*-ray photography of the resonator. Transillumination showed that there was a laryngeal change of tension only when the adult male singer at the top of his range used the female vocal mechanism to produce "falsetto" and, in the corresponding case, when the female used the alternative male mechanism at the bottom of her range to produce the so-called "chest" notes. These changes, obvious to the ear as changes in the quality of the tone, were not observable by reflected light from above.

X-ray investigation showed that any other change or "break" (from "chest" to "head" in the male, or from "middle" to "head" in the female) was due to distortion of the resonator by spread of effort. At the note of change from "chest" to "head" voice in the male (necessitated by increasing strain and ugliness of tone) it was seen that the larynx was depressed as far as possible and the soft palate raised, completely shutting off the naso-pharynx. The cause of this was through allowing the increasing laryngeal effort to spread to extrinsic muscles, thus altering the normal position of the resonator. This can easily be inhibited and the balanced resonator retained, when the voice will be uniform in volume and quality throughout the compass. The mischief starts with the lowering of the larynx when the breath is taken in only through the mouth instead of through the nose and mouth simultaneously (leaving the larynx and resonator in normal position). With the spread of laryngeal effort (increasing tension in ascending phrases) and consequent distortion of the resonator more effort is required to make the voice resonate in conditions inimical to natural tones. Since, however, the mind governs the pitch the willed note is sounded, but it becomes ugly in quality and does not blend with the notes above and below it.

From the first in our investigations we realized that observations by reflected light from above by laryngoscope, stroboscope, etc., could not give such definite results as transillumination. Further *x*-ray photography foretold the possibility of filming the resonator during phonation, and this has actually happened in Germany, where recently a cultural film showed a strip depicting the vocal cords functioning, together with a profile projection of a man forming vowels, etc.

As long ago as 1774 Mancini commented upon singers who sang in one register only. That in my opinion and experience is the only really natural way of singing.—I am, etc.,

London, W.5. E. T. EVETTS.

Treatment of "Acute Osteomyelitis"

SIR,—I think that the conservative treatment of osteomyelitis is often likely to lead to disaster if applied to children in whom the infection starts in an epiphysis, such infections being usually very acute.

A boy aged 15 complained of feeling ill after lunch one day. His temperature was found to be 105° F. He was put to bed, a provisional diagnosis of influenza having been made. His temperature at 6 p.m. was still 105° F., and I was asked to see him. He had no headache, but he looked very poisoned; his pulse rate was 120. I found on the inner side of the left os calcis a small red swelling which was very tender on pressure, and decided that it was a case of acute osteomyelitis of the os calcis. I had him removed to a nursing home at once, and Mr. G. W. Beresford operated. He found already a little pus and some bare bone, though only six

hours after the onset. He trephined a piece about the size of a thimble out of the os calcis. The next day the temperature only went up to 102° F., on the second day to 100.2° F., and by the third day it was normal, and never rose above that again. The wound was completely healed in five weeks, and the boy was able to walk about.

Contrast this with a boy who was sent into the municipal hospital as a case of acute rheumatism on the sixth day after he had begun complaining of pain in the right heel. On admission the case was at once recognized as an osteomyelitis of the os calcis, but, with the six-days delay, a septicaemia had started, and there was already an acute osteomyelitis of the right ulna, and some days later the left ilium was attacked. The lesions were treated surgically, but the boy was desperately ill, and was only able to leave his bed after nine months, with a deformed os calcis, an ankylosed hip-joint, and an irregular, newly formed ulna.

Acute osteomyelitis in an epiphysis may be mistaken for rheumatism, with disastrous results, though it should be easy to distinguish the two, since at the onset only one point is involved, and that near a joint and not in it. The face is flushed, the tongue dry, the temperature high, and there is usually delirium at night, whereas in rheumatic fever more than one joint is painful, the face is pale, the skin moist, the tongue large and flabby, the temperature rarely above 103° F., and delirium is very unusual.—I am, etc.,

Hove, Jan. 23. WALTER BROADBENT, M.D., F.R.C.P.

Circumcision

SIR,—In the *Journal* of January 14 (p. 86) Dr. D. W. Winnicott expresses the opinion that circumcision is frequently performed unnecessarily. It seems to me to be of importance that this topic should be removed so far as possible from the realm of opinion into that of conclusions based upon evidence. Therefore, although my data are not yet complete, I wish to present what evidence I possess that circumcision is very rarely necessary.

In the course of work at infant welfare centres I am required to advise upon the question of circumcision in a large number of infants. In spite of extensive search in textbooks I have failed to discover any sound guidance on this question, and therefore I have lately been making careful observations on all male babies seen. Records have been kept of the condition of the prepuce in every male child seen for the first time during a period of seven months. This provides a group of 175 unselected infants, most of them only a few weeks old and all under 1 year. They have been classified into the following groups:

I. Cases in which the prepuce is so tight that the glans is not visible without forcible stretching of the preputial orifice: 5 cases (3 per cent.).

II. Cases in which the prepuce cannot be retracted as far as a point midway between meatus and corona without forcible stretching and/or breaking down of preputial adhesions: 114 cases (65 per cent.).

III. Cases in which the prepuce is held by adhesions at the corona glandis or at a point nearer the corona than the meatus: 44 cases (25 per cent.).

IV. Cases in which full retraction is possible without breaking down adhesions: 4 cases (2 per cent.).

V. Cases already circumcised: 8 cases (5 per cent.).

Assuming that the babies already circumcised were not originally in Group IV, these figures show that 98 per cent. of male infants have "prepuces which cannot easily be retracted over the glans penis" and therefore qualify, according to Mr. Kenneth Walker's criterion (December 31, 1938, p. 1377), for the operation of circumcision. Of the 163 infants in Groups I, II, and III, only two have been referred for circumcision, and these were referred against my advice, because the parents wished it. The remaining infants have been treated by the following technique. So far as possible they have been seen fortnightly, until it has been possible to retract the prepuce easily and fully. At each visit a small amount of forcible retraction of the prepuce has been performed in such a way that the preputial orifice has been gradually stretched and adhesions gradually broken down. By doing this in stages, distress of both mother and baby is almost completely eliminated. The retraction is performed by holding the prepuce between the forefingers and thumbs of both hands, and no instrument is used. After each stretching, acriflavine, 1 in 1,000 in liquid paraffin, is introduced between glans and prepuce.

No case has yet been seen which fails to respond to this treatment. Those in Group I naturally take longer than those in Group III, but the end-result of all completed cases has been a prepuce which retracts easily and fully. In the majority of instances not more than three attendances have been necessary. The question which now troubles me is whether even this relatively innocuous manipulation is necessary in many cases. If preputial adhesions break down naturally later in childhood it is unnecessary to inflict even the slight trauma of breaking them down artificially in infancy. The figures quoted above show that adhesions are rarely absent in infancy. Presumably they are rarely present in adults, so they must break down physiologically at some stage of development. It would be most interesting to know when and how this occurs. As a small contribution to the problem I have recently begun to make notes of the state of the prepuce in every child I have examined over the age of 1 year in whom there is no history of medical attention to the prepuce. In order to avoid a complicated table all cases with adhesions preventing full retraction are grouped together.

	Adhesions Present	Adhesions Absent
1–2 years	106	2
2–3 ,, ...	27	1
3–4 ,, ...	8	2
4–5 ,, ...	9	1
5–6 ,, ...	2	2

It will be seen that up to the age of 3 years the proportion with adhesions is much the same as in infants under 1 year. Moreover, successive observations made at intervals over a period of months, or even years, in many of the cases fail to show any tendency for the adhesions to break down spontaneously under 3 years. In the interval 3 to 6 years there is a small and doubtful indication of a drop in the frequency of adhesions. Unfortunately, I have not the opportunity of obtaining figures for higher age groups, and would be grateful for a reference to any publications on the subject, or access to records of school medical officers.

These data adequately support the conclusion that circumcision is unjustified in infancy except in the very rare instances of obstruction to micturition which cannot be overcome by less drastic measures. I can recollect only one doubtful case in the course of five years' work, and it would be of interest to know how many such cases have been referred to Mr. Kenneth Walker.—I am, etc.,

MARY FISHER,
Oxford, Jan. 23. Assistant Medical Officer of Health.

SIR,—Your correspondents do not appear to have noted Dr. D. W. Winnicott's very pertinent question regarding infant circumcision (*Journal*, January 14, p. 86)—namely, "Why wait for this development?" the development referred to being the natural separation of the prepuce and glans. Jacobi (*Therapeutics of Infancy and Childhood*) states that the soft cohesion between prepuce and glans is a physiological condition, and therefore found in nearly all male infants, and that the final separation takes place between the ninth and thirteenth years. He says, further, that we cannot recognize an actual phimosis before this separation is complete. Mr. Kenneth Walker (December 31, 1938, p. 1377) describes congenital phimosis as a prepuce which cannot be easily retracted over the glans

at birth. In my experience of about 2,500 male infants whom I have seen born I have seldom found one prepuce which was easily retracted. If, as Jacobi says, the cohesion of prepuce and glans is a physiological one and is abolished during childhood, there is no excuse for so much interference with the organ by circumcision, or by the daily pulling on the prepuce which nurses and mothers seem to delight in nowadays. I do not know what the psychological effects of circumcision may be, but I have seen three infants, operated on in the out-patient departments of hospitals, who nearly died of haemorrhage after circumcision. I had to ligature the fraenal artery in each case. Why not "wait and see"?—I am, etc.,

Birmingham, Jan. 27. ROBERT ANDERSON.

SIR,—This subject forms what may be termed a "hardy quinquennial." May I crave indulgence to repeat a note which you published some ten years ago from me.

Starting infant welfare consultations in 1915, I met with adherent prepuces in about 75 per cent. of my male infants. After some months' labour at relief I thought I might have a look at the condition as it existed in the population before the good work of child welfare came about. I made a special survey of my school children of the male sex, numbering somewhere approaching 1,800, with this result. Omitting a small number who had been circumcised, I found only two boys for whom any such operation might have been beneficial. The rule was that retraction of the prepuce at ages from 5 on was as simple as pulling up the leg of one's trousers. That this was not due to mass masturbation was very clearly evidenced by the innocent response to my manipulation given by youngsters from 5 to 8 years old.—I am, etc.,

J. M. MORRIS,
Neath, Glamorganshire, Jan. 23. Medical Officer of Health.

"Olfactory Bacteriology"

SIR,—I was very interested to read Dr. A. H. Barber's note upon the association of mania with acute appendicitis (*Journal*, January 28, p. 162). I think it, therefore, a great pity that he resorts to pre-Leeuwenhoekian bacteriology in his scientific account of the case. I was under the impression hitherto that the town of Wolverhampton was particularly well served in regard to its pathological services, but in this case we are witnessing the unobtrusive launch of an entirely new science—that of "olfactory bacteriology." Dr. Barber, it will be recalled, tells us that he is able to recognize by its smell the nature of an infecting organism in pus. Seriously, I do feel that it is a pity that such an important case as this should receive such cavalier pathological investigation. It is more the pity as I am well aware that in Wolverhampton the pathological facilities are second to none. Yet no swab was submitted to cultural test.

Are we never to see the pathological services that are in existence properly used? Must we always be content with the empiricism of clinical smelling-out of bacteria?—I am, etc.,

London, W.1, Jan. 2. DAVID HALER.

Milk and Asthma

SIR,—Dr. James Adam's letter in the *Journal* of January 14 (p. 87) gives no answer to the question which I have raised. We are both agreed that, in Dr. Adam's own words, from clinical evidence "raw milk is a fruitful source of asthma." We agree that while milk itself contains no histamine, histamine produces bronchial spasm, vascular permeability, and eosinophilia. But we evidently disagree entirely as to the source of the histamine. What is the source of histamine? It appears to me to be reasonable to attribute the origin of this substance to the monilial infection which abounds in raw milk. Monilias are peculiarly rich in acid-fast and alcohol-fast granules, and these are probably similar in composition to those granules which are found in the tubercle bacillus. The breakdown products of these fatty nucleic-acid substances are histamines (Wells, De Witt, and Long, 1932, *Chemistry of Tuberculosis*). Histamine was first obtained from the fungus ergot, and was called ergamine. It would appear far-fetched to allude to a remote histamine production in the gut when there is a liberal supply in the bronchial tract. Has Dr. Adam examined asthmatic sputum for monilia or investigated the milk supply of any of his asthmatic cases for the presence of the monilia organism?—I am, etc.,

Jersey Chest Clinic, Jan. 25. H. GORDON OLIVER.

Relief of Spanish Distress

SIR,—Members of the medical profession are unwearied in their efforts to relieve human suffering, and for this reason I appeal to them on behalf of the Spanish war victims who have endured their prolonged and appalling sufferings with such fortitude.

The *Equipo Anglo-Español* is a mobile hospital in Nationalist Spain and is the only British unit in that country. It has worked close to the front line throughout the bitter fighting of the past two years, and is now in Catalonia. Eight of the staff were recently decorated with the Cross of Military Merit for their bravery. Some 14,000 sick and wounded have passed through the hospital, and, whether Nationalists or Republicans, all are treated with the same care. This hospital in the danger zone has saved innumerable lives and alleviated untold suffering; but instruments and equipment wear out with use, and the need for medical stores increases as the toll of war becomes greater. We earnestly appeal to your readers to send us gifts of new and second-hand instruments, or donations with which we can buy those most needed. All donations in money or kind should be sent to the "Bishops' Committee for Spanish Distress," 38, Eccleston Square, S.W.1, and will be most gratefully acknowledged.—I am, etc.,

CECIL PEREIRA,
London, S.W.1, Jan. 31. Chairman of Executive Committee.

Should Medical Charity begin at Home?

SIR,—I am sure Dr. Henry Robinson is quite capable of dealing effectively, if he so wishes, with the small hornets' nest he seems to have disturbed; but I have been interested to note how differently a seemingly harmless letter may be interpreted and what indignation it may arouse. My unsuspecting English mind read Dr. Robinson's letter as an appeal to us not to forget the B.M.A. Charities Fund in our concern for a more recent and transitory one: further, I read his letter as a whole, whereas your correspondents to date have concentrated on the last paragraph and conveniently omitted the rest.

Mr. Philip Vos, K.C., says that through the Baldwin Fund foreign competitors will not be "established in our midst" and that the refugees are merely in this country "pending re-emigration." His simple faith is very touching, but I fear many of us still doubt it, for no one knows that matters will go as easily as he imagines.

Dr. D. G. Leys's letter is a gem—Scotland enthusiastically advocating *immigration* and distributing pamphlets free in support thereof is fit for *Punch*. Dr. Edward Lampard's children would be spared his workhouse paradise, Dr. Noah Pines's painful surprise and Dr. Nathan Oster's amazement would all be forgotten if every Division could be induced *really* to support our charities.

This Division (Portsmouth) sends about £200 each year to the Charities Fund, and if every other Division would send a proportionate amount according to its members, or even if every medical man and woman contributed one guinea a year, I think Dr. Robinson and his committee would have little anxiety and there would be more for other deserving appeals. Let every one of us who has not done so fill up and post a banker's order for the B.M.A. Charities Fund *now*.—I am, etc.,

Southsea, Jan. 30. E. COWPER TAMPLIN.

SIR,—Dr. Henry Robinson would not hold his present position if he had not a sympathetic disposition, but he has also a forthright manner which some may not understand and a knowledge of what is practicable. He is right to put in the first place the plight and need of our own folk, for he knows that the help now given will be still more meagre if it be shared by others from abroad. Is it right that practitioners who have spent their lives among us and often failed in health through unselfish work for their patients should be put under still further stress in efforts to aid newcomers? The refugees have indeed no moral claim on the funds of existing medical charities and should be supported from fresh sources of income.—I am, etc.,

Ilford, Jan. 30. VICTOR J. BATTESON.

A History of Anaesthesia

SIR,—You will perhaps allow the translators a word or two about slight charges of "unprofessional" inaccuracies at the close of a gracious review of Fülöp-Miller's *Triumph Over Pain* (January 14, p. 68). One of the translators was in professional harness for a quarter of a century, and throughout the work of translation bore such possibilities in mind.

(1) "Death is not necessarily or usually painful." Of course death under anaesthetics is not painful; and persons recovered from drowning by artificial respiration declare that the minute or two of suffocation was not unpleasurable. One may doubt the accuracy of the memory! Often, beyond question, death is abominably painful—as upon the cross, or from angina pectoris. Though most of us may hope to die less painfully than from crucifixion or impalement, we think your reviewer is a little over-sanguine about the pain of dying, or of operation in pre-anaesthetic days.

(2) "It is doubtful whether Cornelius Celsus was a practising doctor; he was certainly never physician to Tiberius." Very little is known about Celsus beyond that he wrote, *inter alia*, a medical encyclopaedia which for long was regarded as authoritative. This would have been unlikely had the author been without medical experience. Sigerist, one of the most distinguished living authorities on the history of medicine, writes categorically of "Celsus the Physician" (*Great Doctors*, p. 27).

"Dr. William Hunter . . . was not a surgeon." The line between medical, surgical, and obstetric practice was not so sharply drawn in the eighteenth century as it is in the twentieth. The *Encyclopaedia Britannica* writes: "By degrees Hunter renounced surgical practice for obstetric." Fülöp-Miller, quoting William Hunter's aphorism that a surgeon was "a savage armed with a knife," had reason for emphasizing that the utterance was that of one who had himself practised the chirurgical art.

We cannot hope that there are no errors in this monumental work, but we do not plead guilty to those pilloried by your courteous and experienced reviewer.—We are, etc.,

Le Tignet, France, Jan. 24. EDEN and CEDAR PAUL.

Universities and Colleges

UNIVERSITY OF OXFORD

On January 24 in convocation the appointment by the Board of the Faculty of Medicine of Dr. B. G. Maegraith as Dean of the Medical School for four years from January 1, 1939, was approved. Dr. Maegraith is a Fellow of Exeter and University Lecturer in Pathology; he succeeds Dr. K. H. Franklin as Dean of the Medical School. The degree of M.A. was conferred by decree on A. H. T. Robb-Smith, M.D.Lond., Nuffield Reader in Pathology.

In Congregation on the same day, the Vice-Chancellor presiding, the annual report of the Nuffield Committee for the Advancement of Medicine, together with the report of the Nuffield Trustees, was presented.

The Rockefeller Foundation has offered to the University £600 for the year 1939 to provide apparatus and equipment in the Department of Pharmacology and a fund for current expenses on research.

UNIVERSITY OF LONDON

At a meeting of the Senate held on January 25, John McMichael, M.D., Ch.B.Ed., M.R.C.P.Ed., F.R.S.Ed., was appointed to the University Readership in Medicine tenable at the British Postgraduate Medical School.

The William Julius Mickle Fellowship for 1939 was awarded to Professor G. Selby Wilson, M.D., B.S., F.R.C.P., D.P.H.

Mr. Philip Geoffrey Scott, B.Chir., F.R.C.S., has been reappointed to the Geoffrey E. Duveen Travelling Studentship in Oto-Rhino-Laryngology for a third year (1939).

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a meeting of the College held on January 26, with the President, Dr. Robert Hutchison, in the chair, the following were elected representatives of the College:

Sir Arthur Hall on the Court of Governors, Sheffield University; Dr. H. C. Cameron as a Member of the Child Guidance Council; and Dr. F. G. Chandler and Dr. Geoffrey Marshall on the Consultants Board of the British Medical Association.

The President announced that a joint committee of the College and the Royal Society of Arts had awarded the Swiney Prize for 1939 to Professor John Glaister, M.D., and Professor J. C. Brash, M.D., for their work *Medico-Legal Aspects of the Ruxton Case*.

Membership

The following candidates, having satisfied the Censors' Board, were admitted Members of the College:

Hassan Radwan Ahmed Abu-Khatwa, M.D.Cairo, Beryl Emily Barsby, M.B.Lond., Geoffrey Walter Boden, L.R.C.P., John Hilary Cobb, M.B.Lond., John Wenman Crofton, M.B.Camb., Mrs. Helen Easdale Dimsdale, M.B.Camb., Hassan Moustfa Seif El Nasr, M.B. Cairo, John Duncan Hay, M.D.Liverp., John Morley Holford, L.R.C.P., Surgeon Lieutenant R.N., William Murray Honeyman, M.B.St.And., Richard Francis Jarrett, M.B.Camb., Adrian Charles Kanaar, M.B.Lond., Albert Weinfield Lapin, M.D.McGill, Arthur Leese, L.R.C.P., Khalil Dorry Loutfy, M.B.Cairo, Neil Baird McGillivray, M.D.Toronto, Kelman Jacob Mann, M.B.Lond., Nicholas Henry Martin, M.B.Oxf., Harry Kirby Meller, M.B.Camb., Jeremiah Noah Morris, L.R.C.P., Basil Gerald Parsons-Smith, L.R.C.P., Richard Basil Perkins, M.B.Sydney, Edward Gregson Grant Rhind, M.B.Aberd., Elizabeth Joan Rooke, M.B.Lond., Douglas Ronald Seaton, M.B.Camb., Omond McKillop Solandt, M.D.Toronto, Wilfred James Stokes, M.D.Lond., Waman Dattatraya Sulâkhé, M.B.Bombay, Carmichael Aretas Young, M.B.Lond.

Licences and Diplomas

Licences to practise physic were conferred upon the following 205 candidates (including twenty-five women) who had passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board, and have complied with the necessary by-laws:

D. J. A. Alban-Jones, Edith M. M. Alexander, F. I. C. Apted, N. H. Ashton, N. B. Atkin, Ailsa Bannerman, Diana E. Barbour, J. D. M. Barton, J. R. Belcher, H. E. Bentley, Anna M. Berry, T. P. Blanshard, T. M. Brand, A. E. Brewer, D. J. Brewer, M. P. Browne, H. R. Calderwood, D. H. Campbell, Diana M. M. Carr, R. N. Cates, F. E. de W. Cayley, Anna W. Chacko, R. G. Chapman, T. H. W. Clarke, A. G. H. Clay, M. J. Cole, H. J. Cornelius, E. R. T. Crabb, N. Ll. Crabtree, G. P. Crean, B. C. Curwood, P. J. Cutler, M. A. Dave, I. R. Davies, E. M. E. Decottignies, J. E. Dickson, D. Dunbar, J. R. Dunn, E. S. Elliott, R. G. Evans, B. Fairburn, T. Faulkner, D. A. Ferguson, P. Firstenberg, L. R. Flowers, J. C. Ford, P. Forgacs, E. L. Frankel, A. Freedman, B. Freedman, J. M. French, B. A. Furniss, O. Garrod, H. Glatston, H.-M. Goldberg, J. A. S. Green, H. Greenburgh, W. E. Greenwood, T. B. Griffiths, F. W. Gunz, Phoebe H. Guy, G. L. Haine, Joan M. E. Hannaford, Kathleen M. Harding, A. Hargreaves, W. R. L. Harrison, A. B. Hassan, E. A. Heaslett, Joan F. Heffernan, W. M. R. Henderson, B. L. Heydon, T. L. Hilliard, P. N. Holmes, R. E. Horton, A. C. C. Hughes, P. W. Hunt, T. B. Hutton, W. H. Hylton, J. D. H. Iles, Y. Ivenitzki, C. A. Jackson, W. H. James, D. G. Jarman, M. A. K. Javid, E. M. K. Jellicoe, D. A. H. Johnson, R. G. H. Jones, C. Joseph, D. N. Kelsey, J. A. Kennedy, J. J. Kennedy, P. J. M. Kent, C. W. Kesson, P. D. C. Kinmont, H. Kopelman, H. Kyng, H. Le Vay, O. G. Lane, Joan V. Laughlin, R. F. Lawrence, R. S. Lawrie, H. A. Lee, H. W. Lees, M. M. Leigh, W. S. Lewin, D. C. Light, R. G. Linton, P. Lewis, Joan E. Mackworth, K. S. MacLean, N. L. McNeil, L. M. Magurk, G. S. Mansell, M. L. Mason, J. B. L. Mathur, E. B. Meyrick, U. Mohan Rao, B. Moore, R. T. Moore, Rosie Morris, K. D. Moynagh, R. S. Murley, P. W. Nathan, C. D. Needham, Jean C. Nelson, C. M. Norman, A. W. N. Oatway, S. Oram, D. J. Paddison, G. J. Parfitt, R. F. Parfitt, F. R. Park, Dorothy K. Paterson, J. H. Paterson, J. W. Perrott, W. D. B. Pettigrew, Catherine F. Pimm, F. W. Pote, G. J. Potts, T. M. Ll. Price, C. J. F. Pulley, C. E. Quin, C. P. F. Quinnell, V. L. Redman, P. E. Rees-Davies, C. H. J. Rey, A. L. Reynard, D. Rice, R. W. Riddle, Gladys M. Robertson, G. E. S. Robinson, R. G. Robinson, N. C. Rogers, C. J. Rooke, J. Rubie, A. F. Russell, Ethne N. M. B. Ryan, J. K. Salmon, R. S. Savidge, Eva G. Seaton, Barbara J. Shorting, I. F. Smith, N. D. Smith, W. E. Smithson, E. P. S. Snell, G. F. A. Somerset, T. D. Spencer, W. E. Spring, D. Stafford-Clark, B. E. C. Stanley, W. M. Stephens, G. E. Stoker, Margaret M. Strange, R. Sudhakar Rao, P. D. Swinstead, L. R. Taylor, Norah G. Taylor, W. N. Taylor, Margaret D. Thomas, W. O. Thomas, J. R. O. Thompson, P. G. Todd, M. A. Tombuk, R. D. Tonkin, Susan M. Tracy, F. G. Tucker, H. J. Voss, A. F. Wallace, J. F. H. Walton, P. M. Ward, R. D. Ward, W. O. Whittaker, E. B. Wild, A. E. Wilkinson, C. G. Williams, C. P. Williams, Edgeworth H. Williams, Edward H. Williams, A. E. Wilson, B. D. R. Wilson, Elsie N. K. Wilson, E. R. Winkleman, H. Wolfsohn, Winifred Wynne, N. A. F. Young.

Diplomas in Psychological Medicine and Laryngology and Otology were conferred jointly with the Royal College of Surgeons of England. The names of the successful candidates were printed in the report of the meeting of the Council of the Royal College of Surgeons published in our issue of January 21 (p. 143).

Diplomas in Public Health were granted, jointly with the Royal College of Surgeons, to:

Minnie Atkin, G. O. A. Briggs, E. H. Capel, Annys M. Cusack, P. M. Davies, J. A. C. Franklin, J. W. K. Harper, E. A. Hoare, R. R. Leaning, J. J. Linehan, T. B. Mirchandani, H. G. G. Robertson, J. B. L. Tombleson, D. H. Waldron, M. K. Wasti.

Diplomas in Tropical Medicine and Hygiene were granted, jointly with the Royal College of Surgeons, to M. G. Hyder, I. MacKay, S. Mukherjee.

Diplomas in Anaesthetics were granted, jointly with the Royal College of Surgeons, to:

J. Adams, Hazel R. B. Allison, D. H. Belfrage, J. H. T. Challis, A. P. Ll. Cogswell, W. L. Colquhoun, Joan Cooper, E. A. Critien, C. Cunningham, F. De Netto, Hilda M. Denton, Ruth Dovey, P. J. Drury Byrne, J. R. Duerden, E. C. Faraker, G. L. Feneley, M. Fisher, F. W. Fullerton, V. F. Hall, K. McK. Heard, J. W. Heney, J. A. Hill, W. I. T. Hotten, J. S. Hudson, G. L. Jepson, B. R. M. Johnson, J. Johnston, H. A. Kelly, A. D. Lamphee, W. A. Low, K. E. Madan, G. G. Marshall, W. T. D. Mart, E. Moir, R. H. Moore, E. B. Murrell, B. L. S. Murtagh, F. L. Napier, Annie F. P. Pillans, D. G. Renton, J. F. Ryan, E. A. Scott, V. E. Vessell, E. H. Watts, J. H. Way, Marion K. B. Whyte, J. D. Young, and to the seventeen candidates whose names were published in the report of the meeting of the Council of the Royal College of Surgeons in our issue of December 17, 1938 (p. 1293).

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

A quarterly meeting of the Council was held in the College House, 58, Queen Anne Street, W., on January 28, with the President, Professor W. Fletcher Shaw, in the chair.

Membership

The following were elected to the Membership of the College:

Paul Cowell Barkla (Edinburgh), Anthony Charles (London), Stanley George Clayton (London), Stanley George Cumming (New Zealand), Jackson Cooper Cuthbert (Sunderland), David Alfred Davies (London), Molly Devenish-Meares (London), Alice Eleanora Dickie (London), James Edmett Giesen (London), Charles McTaggart Hopkins (Australia), Norman Kenneth Bernard Kimbell (London), Owen Vaughan Jones (Bangor), Arthur William Lawler (Canada), George Panton Milne (Aberdeen), Margaret Moore-White (London), Angus Johnston Murray (Australia), Edward Lawford Nicolson (Sheffield), Heriot Roland (Australia), Albertus Wynand Louw (South Africa), Thomas Frederick Rose (Australia), Sophie Schiller (South Africa), James Smibert (Australia), James Kenneth Sunderland (Edinburgh), Eileen Mary Whapham (London).

Representatives

The President was appointed to represent the College on the Central Emergency Committee of the British Medical Association; Dr. T. Watts Eden was reappointed representative of the College on the Consultants Board of the British Medical Association; Mr. J. P. Hedley was appointed as the representative of the College on the Council of the British Health Resorts Association. Mr. Aleck Bourne was appointed Honorary Curator of the College Museum.

EPIDEMIOLOGICAL NOTES

Influenza

The epidemic of influenza in England and Wales appears to be on the wane, as also in Scotland, Eire, and Northern Ireland, but in every one of these countries a considerable increase in deaths ascribed to influenza has been reported. Scotland fared the worst, the deaths from influenza having risen from 35 to 60, compared with 26 in the County of London. In Scotland also a slight increase in the notifications of primary pneumonia was reported, and the number stands at 436, which is a quarter more than in the corresponding week of last year. The increase in the deaths from influenza in Scotland is reflected in the general death rate, which rose from 19.3 to 19.8 per thousand population in the sixteen principal towns. Of the 60 deaths, 43 were in Glasgow, 6 in Paisley, and 2 each in Dundee, Motherwell, and Wishart, Hamilton, and Perth. Among the 126 great towns of England and Wales the highest number of deaths from influenza occurred in London 26, Liverpool 24 (death rate 20.1), Manchester 15 (death rate 19.0), Salford 10. Despite the increase in the number of deaths from influenza in England and Wales and London the death rate fell during the week from 16.9 to 16.1 in the former and from 16.6 to 16.2 in the latter.

In Germany during the three weeks ended January 3, deaths from influenza in towns of a population over 100,000 rose from 54 to 62 and 95; during the same period the number of deaths ascribed to pneumonia were 373, 531, and 640, while the general death rate rose from 12.9 to 14.9 and 15.1 per thousand population.

In Hungary during the week ended January 21, 279 (78 in Budapest) complicated cases of influenza were notified, compared with 179 in the previous week.

Diphtheria and Scarlet Fever

The seasonal increase in the incidence of diphtheria and scarlet fever was reported from all four countries, the only exception being a small reduction in the notifications of diphtheria in Scotland, where they fell from 232 to 194. In England and Wales deaths from diphtheria rose from 32 to 34, while there were no deaths from scarlet fever and 3 in the previous week.

No. 3.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended January 21, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns (125 in 1938) in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)					1930-38 (Median Value Corresponding Weeks)	
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)	(a)	(b)
Cerebrospinal fever	38	7	12		—	30	4	8	1	—	•	
Deaths		1	1				4	—				
Diphtheria	1,345	132	194	54	22	1,737	179	252	59	56	1,526	179
Deaths	34	2	7	3	—	36	3	4	7	—		
Dysentery	36	8	15		—	250	63	150		—		
Deaths				—	—				—	—		
Encephalitis lethargica, acute			—		—	6	—	—		—		
Deaths		2					—					
Enteric (typhoid and paratyphoid) fever	22	5	1	7	1	19	4	3	5	3	21	
Deaths	2	—	—	1	—	1	—	—	1	—		
Erysipelas			93	8	6			104	10	6		
Deaths		—					1					
Infective enteritis or diarrhoea under 2 years												
Deaths	52	14	11	4	2	69	13	7	6	6		
Measles		30	20		3			1,544		833		
Deaths	6	—	—	—	—	48	3	14	6	15		
Ophthalmia neonatorum	87	13	24		1	100	6	28		—		
Deaths												
Pneumonia, influenzal*	1,638	173	79	15	49	1,321	117	27	3	39	1,529	201
Deaths (from influenza)	223	26	60	16	11	73	12	12	—	2		
Pneumonia, primary			436	14				345	19			
Deaths		16		25	29		33		16	12		
Polio-encephalitis, acute	5	1				—	—					
Deaths		—					—					
Poliomyelitis, acute	10	2	1	2	—	8	1	5		—		
Deaths		2					—					
Puerperal fever	2†	2	10		1	7†	7	16	2	—		
Deaths		—					1‡					
Puerperal pyrexia	179	20	9		2	182	12	30		6		
Deaths												
Relapsing fever	—	—			—	—	—	—		—		
Deaths												
Scarlet fever	1,821	139	349	77	89	2,459	165	520	114	78	2,463	236
Deaths	—	—	2	1	—	—	—	1	2	—		
Small-pox	—	—	—		—	—	—	—		—		
Deaths	—	—		—	—	—	—		—	—		
Typhus fever	—	—	—	—	—	—	—	—	—	—		
Deaths				—	—	—	—		—	—		
Whooping-cough		257	559		31			47		7		
Deaths	20	5	16	4	2	20	2	1	2	1		
Deaths (0-1 year)	466	85	85	37	36	469	90	69	38	31		
Infant mortality rate (per 1,000 live births)	71	70				78	74					
Deaths (excluding stillbirths)	6,545	1,274	980	256	215	5,656	1,105	886	254	206		
Annual death rate (per 1,000 persons living)	16.1	16.2	19.8	17.2	19.1	13.9	13.9	16.6	17.2	18.3		
Live births	6,253	1,054	900	304	223	6,830	1,343	915	362	220		
Annual rate per 1,000 persons living	15.4	13.4	18.2	20.4	19.8	16.8	16.9	18.7	24.5	19.5		
Stillbirths	256	32	42			284	41					
Rate per 1,000 total births (including stillborn)	39	29				40	30					

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† After October 1, 1937, puerperal fever was made notifiable only in the administrative county of London.

‡ Death from puerperal sepsis.

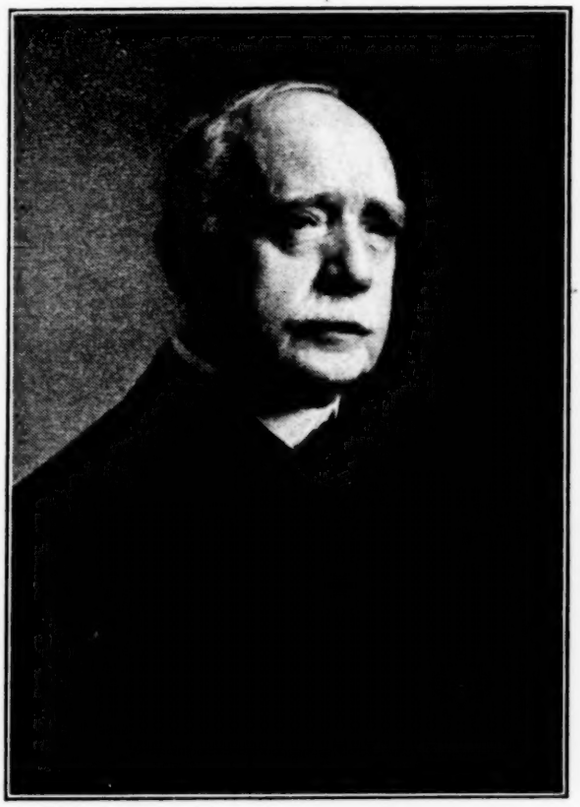
Obituary

SIR ROBERT PHILIP, M.D., LL.D., F.R.C.P.

Extra-Physician to H.M. the King in Scotland; Consulting Physician, Royal Infirmary, Edinburgh; Professor of Tuberculosis, Edinburgh University

We much regret to announce that Sir Robert Philip, pioneer in the modern treatment and control of tuberculosis, died at his home in Palmerston Road, Edinburgh, on January 25.

Robert William Philip, son of the Rev. George Philip, D.D., was born on December 29, 1857. He was educated at the High School and the University of Edinburgh, and graduated M.A. before qualifying to practise in 1882, which he did with honours after an unusually successful career as a student. Residence as house-physician in the Royal Infirmary followed, and some postgraduate work was carried out in Leipzig, Vienna, and Berlin. In 1887 he was awarded the Gregory Prize for the practice of physic, won his M.D. with a gold medal, and was assistant to the professor of practical physic in the University of Edinburgh and examiner in medicine and pathology at Aberdeen. In 1890 he was appointed to the honorary assistant medical staff of the Edinburgh Royal Infirmary, and advanced in due time to the full staff. He also became a lecturer in the University on diseases of the chest, to which, as it will be seen, he was giving special attention. Three years earlier he had visited America for the ninth International Medical Congress at Washington, and read a paper there on the aetiology of phthisis. In it he told how, when working in the embryological laboratory, he and others were much impressed with Koch's discovery of the tubercle bacillus as the cause of consumption, and set out to test its value by a series of laboratory experiments. One result of these was the description of a new method of staining the bacillus (1886). He gave a similar address with some additions at a meeting of the Edinburgh Branch of the British Medical Association. It was headed "A Contribution towards the Aetiology of Phthisis," and was published in the *British Medical Journal* (1888, **1**, 180). His thesis was that although Koch's bacillus was beyond doubt the cause of the disease, clinicians were far from a rational conception of the cause of death. He therefore had carried out some observations with a preparation made from phthisical sputum which was kept for a day or two, treated with three parts of rectified spirit, sterilized by Koch's method, filtered through muslin and paper, and finally reduced to one-fifteenth of its bulk. This was injected into frogs, mice, rabbits, and—one can hardly be surprised—proved to be very toxic, causing death from what he thought to be its depressive action on the heart. He therefore came to the conclusion that the lethal influence of the bacillus was due to the production by it of certain poisonous products. The observations were published with other matter in book form in 1891.



What proved to be an all-important step in Philip's career was his appointment in 1885 as physician to the New Town Dispensary in Edinburgh, where he applied his mind seriously to the effect of Koch's discovery in the practical side of the treatment and prevention of tuberculosis. He saw more clearly than others apparently—at least acted as if he did—the importance of the fact that consumption was caused by a definite bacillus present in the sputum, and that the methods of dealing with the disease then in force at his own dispensary and other clinics and hospitals were hopelessly inadequate. They merely considered the individual patient, and made no attempt to prevent the spread of the disease by contagion through the sputum, as he put it. If the community as such was to benefit by the discovery, there appeared to be need for a centralized effort in order to ascertain the extent of tuberculosis in a district and to devise means for its limitation and prevention. He therefore formed one himself in 1887—the Victoria Dispensary for Consumption—which was, as will be seen, almost as important a landmark in the history of tuberculosis as Koch's discovery of its cause five years before. The dispensary was to be a collecting centre where cases from manifold sources were to be received, and through which, by the systematic examination of homes and of households—often the nests of tuberculosis—other existing cases would be discovered and placed under suitable treatment.

The Victoria Dispensary for Consumption and Diseases of the Chest was the first of its kind in the world. France followed suit in 1902, and England at Paddington, but not until 1909. It was under voluntary management and had nurse visitors for the homes of the patients. It also arranged for examination of other members of the household and the condition of the homes of the patients. A small hospital, sanatorium, and farm colony for training men for suitable occupations were added in subsequent years as the Royal Victoria Hospital for Consumption and Farm Colony. Later still a Trust was formed to make grants to suitable subjects of the disease. This was supported freely by voluntary subscriptions. A final step was the gift of £18,000 to Edinburgh University to found a chair of tuberculosis and to promote the adequate education of doctors in all forms of the subject, and Philip was naturally appointed the first professor, in 1917. A course of thirty lectures, including clinical teaching visits to sanatorium and farm colony and an examination in the subject, was made a compulsory part of the curriculum for the qualifying degree. This may be, perhaps, considered as rather

overburdening an already overburdened course of study, and its example has not been followed in any other British university. The success of the dispensary probably stimulated health committees to take increased activity in combating tuberculosis, and voluntary notification was instituted by some medical officers of health, one of the earliest being James Niven at Oldham in 1892 and later at Manchester in 1899.

Although notification of the disease was made compulsory in 1909, the most effective step was not materialized until 1921, when all county and county borough councils were compelled to establish a tuberculosis scheme of which a dispensary formed the base. The Victoria Dispensary probably had a good deal to do with the foundation in 1898 by King Edward VII, then Prince of Wales, of the National Association for the Prevention of Consumption and Other Forms of Tuberculosis, for he was a member of the first council, and lectured in its support in Carlisle in 1899 and in other towns in later years. He subsequently became chairman of the council and one of its most active members. His views on the need for dealing with the tuberculosis problem extended to America, for in 1890 he had been awarded the Alvarenga Prize of the College of Physicians of Philadelphia for an essay on pulmonary tuberculosis, which was published next year at Edinburgh. In 1908 he was present at the International Congress at Washington, and two years later he was asked his opinion on the results that might be expected from a ten-year programme of operations proposed by a conference in Albany, New York State. He wired in reply: "Prosecute great programme proposed; watch child as potential tuberculous seedling; correct faulty compulsory environment; and expect 40 per cent. reduction by 1920 and practical disappearance within a generation and a half." In 1928 he received the Trudeau Medal of the American National Tuberculosis Association, which is given annually to the individual who has made the most meritorious contribution to the knowledge of the cause, prevention, and treatment of tuberculosis.

Research work received Philip's keen support as creator of the special laboratory of the Royal College of Physicians of Edinburgh and as a member of the Medical Research Advisory Council and of the Departmental Committee on Tuberculosis. He was a member, and president for a varying length of time, of several tuberculosis societies at home, and a corresponding or honorary member of others on the Continent or in America which he attended for congresses or national movements. He was on the council of the International Association for the Prevention of Tuberculosis, and president at its conference in 1921 in London. He received a knighthood in 1913, was for some time an Honorary Physician to the King in Scotland; and held many high positions in the medical life of Edinburgh in its Royal College of Physicians, of which he was President for five years, and in its Royal Society; and he presided over the Annual Meeting of the British Medical Association in 1927 when it assembled there, and had held many high offices at earlier meetings of the Association. He was also the possessor of honorary degrees from several universities with which he had been connected, and the Royal College of Physicians of London made him a Fellow in 1933 under the by-law recognizing special services to medicine.

Dr. A. Fergus Hewat, physician to the Royal Infirmary, Edinburgh, writes:

The death of Sir Robert Philip has deprived the world of one of its great public benefactors; and the City of Edinburgh, where his pioneer work was carried out, mourns the loss of one of her most notable citizens, who worked untiringly in the cause of public health, through his attack on the ravages of tuberculous disease.

Sir Robert Philip was appointed an assistant physician in the Royal Infirmary, Edinburgh, in 1890—on the same day as the late Drs. George A. Gibson and Alexander Bruce; and in due course he became a full physician and served for the statutory period of fifteen years. In spite of the arduous duties of a general physician he did not pause or falter in the development of his schemes for the better understanding of tuberculosis and the guidance necessary to attempt its eradication by every possible means.

During the early years of this century the Edinburgh Extra-Mural School was at its zenith, and it was staffed by a very virile group of young teachers, many of whom attained professorial rank at a later date. It was my good fortune to meet Sir Robert Philip when I was a student, and I attended at different periods three extra-mural classes in which he took a large share of the teaching. One was a small class at the dispensary for the study of pulmonary tuberculosis. The second was a class in physical diagnosis and clinical methods, conducted in conjunction with Dr. Lovell Gulland; and despite the early hour and voluntary nature of the class it was very well attended. Finally, I was fortunate enough to be a member of a systematic class on medicine, conducted by the late Drs. George A. Gibson and Alexander Bruce, and Dr. Philip. This was a most popular and crowded class for senior students. The impressions gained—now thirty years ago—have remained vivid, thanks to the gifts of a great clinical teacher who combined lucid explanation and a delightful delivery with at all times a wide outlook on disease as it affected the community. From these early days I have been closely associated with Sir Robert Philip in various capacities—as a clinical tutor in his wards at the Royal Infirmary, and later, after the war and when he had attained professorial dignity, as his first assistant in the Class of Tuberculosis for a period of eleven years. During these thirty years I have watched the development of his schemes and seen his singleness of purpose in his co-ordinated work for the betterment of mankind and the study of tuberculosis. He was at pains to impress fundamentals upon his under- and post-graduate hearers; and many must have taken away to distant lands a conception of outlook which has stood them in good stead in their everyday work, be it as practitioner, specialist, or public health worker.

Sir Robert Philip had a unique experience with the British Medical Association: when the Association met in Edinburgh in 1898 he was the Local General Secretary; and in 1927, when the Association paid Edinburgh the compliment of another visit, Sir Robert Philip was President. It will be admitted by all who worked closely with him that he was the ideal man for these duties—in his younger days as secretary, and in his maturer years as President. As Local General Secretary of the 1927 Meeting, I can whole-heartedly testify to the enormous amount of work he undertook personally in arranging for it. He was the inspiration of all subcommittees, and he made it clear that nothing in the preparations was to be regarded as too trivial for his attention. He was punctilious in all details and far-seeing in laying down the broad lines which were to be followed. His calm, unruffled demeanour when things seemed to be going wrong assisted much in the smooth running of the preparations. He was always a good friend to the British Medical Association, and some of his most interesting papers were published in its *Journal*.

Possessed of a clear business head, Sir Robert Philip was much in demand as a chairman of medical meetings; and since the war there was no one in Edinburgh who was so skilful in piloting a committee through a difficult or anxious discussion. Following on his unusually long period of five years as President of the Royal College of Physicians, he became Curator of the Laboratory of the College, and with his usual skill and foresight he guided this important research and reporting organization through an extremely anxious period. Not content with developing his "Edinburgh Scheme"—which in due course was handed over to the municipality in connexion with the general tuberculosis scheme adopted by the country—he began in 1921 on the outskirts of the city a new scheme for a sanatorium colony where all types of tuberculosis could be admitted for treatment and intensive research. This institution—Southfield Sanatorium Colony—has developed into a recognized research centre, fully equipped from both the treatment and teaching points of view.

Through all his work—sociological, teaching, and organizing—his pertinacity of purpose carried him over difficulties which would have balked a less clear-sighted and able worker. He never lost heart, and he inspired a feeling of optimism and progress into all those who worked alongside of him. He maintained a high standard of effort, and he spared no one who did not try to work up to this standard. He was an accomplished after-dinner speaker and had the faculty of interesting his audience in any subject he chose to discuss. He was bountifully hospitable, and many were the delightful anecdotes and experiences he related in the quiet of his own home with several of his intimate friends and workers gathered round him. Many medical and other visitors from distant lands will remember with gratitude the dignified hospitality and cordial welcome they received at the hands of this pioneer who, with his confident outlook and optimistic nature, was determined to gain his point when he knew it was in the interests of humanity. Many a medical man, and even lay worker, will bless the day he studied under the master mind, for Sir Robert Philip was always generous in his offers of help and backed his men with determination when they applied for posts for which he thought they were suitable.

In reviewing, for the *Edinburgh Medical Journal*, Sir Robert Philip's *Collected Papers on Tuberculosis*, I concluded with the following remarks: "The value of this publication is so great that we hope Sir Robert Philip will collect into a second volume all his other papers—including those dealing with more technical matters; and that he will also publish in book form his Class Lectures, which have been such an inspiration to students since the institution of the Chair of Tuberculosis twenty-one years ago." I fear the suggested publication of a second volume cannot have been undertaken, and that we shall not have the benefit of reading his Class Lectures, as failing health prevented any active work of this kind. We who worked with him mourn his loss. And we extend our sympathy to Lady Philip, who for many years has taken such an active part, particularly in London, in the work of tuberculosis dispensaries.

Dr. Edwin Bramwell writes:

As one who was associated with the late Sir Robert Philip as his assistant physician for eight years and who later came in contact with him in a variety of capacities, I would like, if you can spare me the space, to contribute a few words of appreciation to the memory of a man of very outstanding ability. Sir Robert was a great man. His reputation will be perpetuated in connexion with his pioneer work in the campaign against tuberculosis, but his accomplishments here—and this is my point—were merely the reflection of his mental capacity. It is not as a clinician that I recall Sir Robert, for it was the wider issues rather than the individual case which especially interested and appealed to him. I shall remember him as one who combined in his personality a rare selection of intellectual attributes. A wonderful organizer and administrator, he had the range of vision of the great statesman. He was gifted with a remarkable appreciation of, and insight into, the intricacies of a complex problem and was a master of the subtleties of debate. He was an admirable speaker with the faculty of finding on the spur of the moment the precise words with which to convey the exact shade of meaning it was his intention to express. Sir Robert was a man of wide general culture and of consummate tact. He would have adorned the position had he been appointed as the diplomatic representative of the country at the Court of one of the Great Powers. As a chairman he was unsurpassed. One has to go back in the annals of the Royal College of Physicians of Edinburgh a hundred and sixty years to find a president who occupied the presidential chair for so long as he did. Sir Robert will be regarded in Edinburgh as one of the greatest alumni the school has produced. His name is to be included among the masters of medicine of the last half-century.

Dr. Harley Williams, secretary-general of the National Association for the Prevention of Tuberculosis, writes:

In 1912 Sir Robert Philip became vice-chairman of the N.A.P.T., of the governing body of which he had been a member since its foundation in 1898. In 1932 he was elected chairman, and impressed his characteristic ideas upon the association. There was hardly a month when he did not travel overnight from Edinburgh to preside over the council meetings; he was always master of the business, and prepared to sit laboriously in committee until it was done. The keynote of his teaching was the unity of tuberculosis, that to control it we must observe the child from the cradle, and study throughout life its varying reactions to infection. He was eager that the doctor's outlook should not be limited to pulmonary tuberculosis, and for this reason he took less interest in discussions on pneumothorax and other questions of technique. His tuberculosis dispensary was the forerunner of the modern health clinic. He thought of the social and economic background of a patient's life long before these ideas were fashionable. Sir Robert was the perfect chairman. He had an extraordinary faculty for bringing a committee round to his opinion with careful strategy and hieratic manner. At big conferences of doctors and laymen he knew exactly the right note, and his name was known very widely. The interventions of that deep vibrant voice were always timely, and some extra perception showed him the sense of the meeting. Factious irrelevance quailed before his effective geniality. He counselled brevity in others, but, on occasions, liked to have his say at greater length.

His great pioneer work in tuberculosis belongs to the earlier part of his life, and it never ceased to be his main interest, though new opportunities crowded upon him in later years. He might have become a professor of preventive medicine, dean of the Faculty of Medicine, or even Member of Parliament, but he was against dispersion of energy, believing he had still work to do for tuberculosis. He had wonderful power of initiation, and when

the institutions he had built up in Edinburgh became the property of the Corporation he began again, and the Royal Victoria Hospital Trust, under his persistent direction, founded the first university chair in the subject, Southfield Sanatorium Colony and a herd of T.T. cows—the group intended to be his practical demonstration of how tuberculosis should be taught.

Those who attended the memorial service in St. Giles' Cathedral, Edinburgh, must have been conscious that Sir Robert Philip had made his mark upon three generations: the first—alas, now only few—his contemporaries; then those of middle age who now carry on his teaching all over the world; and, finally, the recent pupils; and all three generations have the same picture of an ageless philosopher. Though austere in his faith on subjects that most counted with him, he appreciated life in a many-sided way. His friends will keep certain personal memories for ever. His choice of a menu, always fastidious, yet never affected; the cigar that must not be pierced; the grapefruit sprinkled with vermouth; his curiosity about ordinary things; the unexpected comments upon architecture; the humour and kindliness of his judgments. There was moderation and wisdom in all his acts. The tactful tyranny he exercised over his junior colleagues was for them educative experience. His formal manner was sometimes taken for vanity; it was really a profound sense of occasion—in fact, no one was more humble or tolerated disagreement more good-naturedly. He was a statesman of medicine, and no stranger to the politician's art. He was incapable of seeing a thing in a narrow or parochial way, but lifted each problem to the universal, and delighted to lay down general principles in grave Philipian language. He had a flair for divining character and atmosphere, and until past his eightieth year neither his sense nor subtlety of judgment failed. He loved walking in Switzerland, and until past younger days enjoyed golf and fishing. But his real interest lay in human affairs; and his vision created a preventive idea that is now so inherently part of modern medicine that its birth in Philip's first tuberculosis dispensary in the year of Queen Victoria's Jubilee may be overlooked.

[The photograph reproduced is by Drummond Young, Edinburgh.]

Dr. HENRY HUGH WILLIAMS, who died on January 1 in Llandaff in his seventy-third year, was born at Holyhead, and practised in Cardiff for over thirty years. He qualified at Edinburgh in 1886, and was first in practice at Wick, near Bath, for seventeen years. Dr. Ivor J. Davies writes: Hugh Williams was a very sound practitioner, and had a comfortable private and panel practice. He never sought any outside interest which might have interfered with the high standard he set himself in work. A keen interest in art was his main hobby, and he possessed many beautiful specimens, some of which were gifts from patients. He was thorough and painstaking, and never showed the least sign of that modern haste which may even trespass into our profession. We often worked together, when his calm and deliberate manner was much to be admired, and his method generally afforded a timely reminder of the sound practice of the old practitioner in the past. He had a deep sympathy with the difficulties of his poorer patients, who loved him for his deliberation and skilful attention. His panel patients never made an excessive demand on his time, for "they never call me unnecessarily." I have no doubt this consideration was the expression of their gratitude and great respect. He probably enjoyed his panel practice most of all, for, as he said, "The artisan class are the best from our point of view, as they are so appreciative and respond strictly to our advice." It was a real pleasure to meet him in consultation, for he was so anxious to understand a difficult case and was so grateful for a detailed description of its features. Another of his fine qualities was a close friendship with a neighbouring practitioner; over a long period of years they combined their practices when either was away on holiday or indisposed. They also frequently assisted one another, and their happy association was perhaps the highest form of partnership in our profession. This plan "worked," as each of them told me in turn, from the time it was first tried. I have no doubt that its success was due to the original "venture," and their example was worthy of universal emulation. It was inspiring to a few of us attending him in a long illness to witness his gallant bearing. The issue must have been early evident to him, because he soon disposed of his practice "whilst the running was good." He never showed the least sign of anxiety or of ultimate defeat, but would quickly turn the conversation away from himself to general matters, and especially to those which concerned his profession. In these last days he was reminiscent of his old hospital at Edinburgh, and even after the lapse of half a century spoke with warmth and affection of his old teachers. He would humorously describe the idiosyncrasies of some of the great men of this ancient university which had evidently left a permanent impression on his life. Hugh Williams leaves a fragrant memory of faithful and devoted service in the ordinary and main path of our profession.

The sudden and unexpected death of Professor VALDEMAR BIE on January 2 has been the occasion of many appreciative references in the Danish medical press by his colleagues to his work and personality. He was born in 1872, and he distinguished himself as a clinician, a hospital administrator, a medical author, and an editor. His first hospital appointment was in 1903, when he was attached as an assistant physician to the Blegdam's Hospital. He was later attached to other public Danish hospitals, and in 1915 he returned to the Blegdam's Hospital as its chief and as lecturer in epidemic diseases. In the following year the latter appointment carried with it the title of professor. He will be remembered for his advocacy of what was at the time considered a heroic dosage of serum in the treatment of diphtheria. As a teacher he was stimulating—witness the many studies published by those who worked under him. As early as 1912 he joined the staff of *Ugeskrift for Laeger*, the journal of the Danish Medical Association. From 1918 to 1922 he was the editor of this journal on its scientific side, and he resumed this post from the beginning of 1924, holding it until his death. The prestige enjoyed by this weekly publication, which celebrates its centenary in May of this year, is in no small measure due to Professor Bie's sound sense of values and the enormous amount of spade work he put into this field. He also took a leading part in the life of the Danish Medical Association, and in 1927 he was the president of the Northern Congress for Internal Medicine.

Professor EDOUARD BOINET, who died towards the end of last year at Marseilles, the town of his adoption and his home for some fifty years, began his medical career as an army surgeon. Passing out of the military hospital of Val-de-Grâce, first but one on the list, he was selected in 1886 for an appointment at the Faculty of Medicine at Montpellier. Before taking it up he spent some time in Tonkin, where he acquired a keen interest in exotic pathology. On his return home his residence in Montpellier was quite short, and in 1891 he was appointed professor of internal and general pathology at Marseilles. There he conducted investigations on experimental and clinical lines, and among the subjects on which he threw new light may be mentioned Addison's disease, the action of poisoned arrows, and the transmission of and immunity to cancer. He was also greatly interested in public health problems, and was for many years a public health inspector.

Medical Notes in Parliament

The House of Commons reassembled on January 31. To permit a debate on foreign affairs the business set down for that day, including the committee stage of the Cancer Bill, was postponed. This postponement is unlikely to prejudice the passage of that Bill into law during the present Session. The House of Lords did not sit during the week for parliamentary business.

The Collecting Charities Bill was set down for second reading in the Commons on February 3 and notice was given of a debate about workmen's compensation on February 8.

The Milk Industry Bill is being withdrawn, and new legislation will be introduced, details of which it is not yet possible to announce.

Sir John Simon announced on January 31 a Government decision that damage to civil property or injury to persons in a future war would be compensated from public funds. Death or injury to civilians would be compensated on the rates and conditions comparable to those for the private soldier on active service. A plan had been worked out for emergency reconstruction of housing property during the conflict.

Mr. R. A. Butler told the House of Commons on January 31 that the Spanish Government said a neutral zone for refugees was impracticable. The French Government appealed for British help in feeding and sheltering those who had crossed the frontier. Britain proposed to give further help as the need developed.

Medical News

The title of Mr. Sampson Handley's Hunterian Oration before the Royal College of Surgeons on Tuesday, February 14, at 4 o'clock, is "Makers of John Hunter."

Dr. Andrew Topping will open a discussion on "Some Problems of Hospital Management" at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W., on Tuesday, February 14, at 5.30 p.m. The chair will be taken by Dr. Thomas Orr.

A course of four lectures, arranged by the Marriage Guidance Council, began at the Kingsway Hall, W.C., on February 2, when Dr. Edward F. Griffith spoke on the physical factors of sex and life. The remaining lectures will be given on Thursdays, at 7.30 p.m., as follows: February 9, Dr. J. A. Hadfield, "Sex and Life: Psychological Factors"; February 16, Dr. Gilbert Russell, "Sex Problems of To-day"; February 23, Dr. Helena Wright, "How to Make a Good Job of Marriage." Tickets (1s. each) may be obtained from the secretary of the Council, Brickfields, Harrow-on-the-Hill.

On January 16 Professor Chevassu inaugurated the new urological department of the Faculty of Medicine of Paris at the Cochin Hospital in the presence of many notables, including the Rector of the University, Professor Roussy.

The Metropolitan Water Board has reached an agreement, the terms of which will be the subject of discussion and friendly arrangement, to take over the Croydon water undertaking. The compulsory provisions of the Bill the Board is promoting in the next Parliamentary session will be dropped, and when the terms of the agreement have been settled the result will be embodied in the Bill.

The new hospital school at Goldie Leigh Hospital, Bostall Heath, Abbey Wood, S.E., was opened on January 20. The buildings were transferred to the London County Council from the Metropolitan Asylums Board in April, 1930, under the provisions of the Local Government Act, 1929. The Council subsequently converted the establishment from a Poor Law institution into a municipal hospital which is used for children suffering from ringworm and other contagious diseases of the skin and scalp. The new hospital school, built at a cost of approximately £16,500, takes the place of a former temporary structure. It is planned on the lines of a modern elementary school, with modifications in the finishings to meet medical requirements. Folding doors and sun awnings on the south side of the class-rooms provide for teaching to be carried on under open-air conditions whenever practicable. To enable children suffering from contagious diseases to be separated from the others the class-rooms are divided into two sections, each with a separate entrance and heated cloak-rooms and lavatories for both girls and boys.

The Chilean Red Cross have cabled to the British Red Cross Society asking for any help possible in the terrible earthquake which has befallen that country causing the death of 30,000 people and injury to over 50,000. The British Red Cross Society immediately replied by cable: "British Red Cross Society express deepest sympathy with your country in the great calamity which has befallen you. Am sending £500. Arthur Stanley, British Red Cross Society, London."

The *Canadian Medical Association Journal* has started a monthly section under the heading "The Cancer Campaign" as its contribution towards fuller control of malignant disease in the Dominion. "We hope," writes the Editor, "to make the new section a sort of clearing-house for Canada in the matter of cancer."

Dr. F. J. H. Crawford and Dr. M. C. Breese (Middle Temple) were called to the Bar on January 26.

The following meetings of the Tuberculosis Association will be held at 26, Portland Place, W., on Friday, February 17: 4 p.m., council meeting; 5.10 p.m., general meeting, followed by paper by Mr. James Carver, "Genito-urinary Tuberculosis"; 8.10 p.m., short papers by Dr. Basil Roberts, "Cadmium in the Treatment of Pulmonary Tuberculosis"; Dr. Philip Ellman, "Healing by Natural Resolution in Pulmonary Tuberculosis, with or without Cavitation"; Dr. G. E. King Turner, "The Teeth as 'Indicators' in Pulmonary Tuberculosis"; and Mrs. White, "Physical Treatment in Modern Thoracic Surgery."

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Tapeworm

Dr. G. R. KENNEDY (Wolverhampton) writes in reply to "X. Y. Z.'s" query (January 28, p. 198): If his patient will sit with her buttocks in warm water while passing the tapeworm there will be no difficulty about the evacuation of the head.

Dr. W. H. GOSSIP (Kendal) also writes: About two years ago I had a patient with just such a resistant specimen as that with which "X. Y. Z." has to deal. None of the usual remedies produced the head of the worm, though scolices came away in vast quantities. However, I remembered seeing in the *Journal* an account by Dr. P. W. Philip of Huntly (March 9, 1935, p. 514) describing the cure of such a case by the administration of chloroform internally. I tried this treatment in my case, and the head came away attached to about three feet of worm the second day after treatment was begun. The patient felt sleepy for some days but suffered no serious ill effects. I would suggest, therefore, that "X. Y. Z." should follow out these instructions: give the patient at 8 a.m., 10 a.m., and 12 noon 20 minims of chloroform with alcohol to 1 drachm. At 2 p.m. give 1 oz. of ol. ricini or some other strong aperient. If this is not successful repeat the treatment in three days' time.

Dr. EDMOND MURPHY (Cork) advocates the same treatment, but suggests that the 20-minim doses of chloroform should be given in simple syrup.

Dr. E. A. ADDISON (Ipswich) writes: During the past week, in the case of a woman aged 65, I have found the following plan successful: (1) a diet of beef tea, 2 pints daily for four days; (2) ext. cascara sagrad. liq., 2 drachms daily for four days; (3) on the fifth day, ext. filicis liq., 1 drachm in emulsion to 1 oz., 2 drachms every quarter of an hour; (4) followed an hour later by ½ oz. mag. sulph. The complete worm was passed with the head intact.

Dr. J. SPENCER SHEILL (Dublin) writes: Feed the patient normally, but only just adequately, with a minimum of proteins, for seven days as a preparation for the treatment, but at every meal let her "indulge" in a liberal amount of sour and spicy articles—pickles, vinegary sauces, chutneys, peppers, spices, curries, etc. *Bothriocephalus latus* does not like this regimen, and at the end of a week his vitality is below par and his hold upon the intestinal wall is feeble. On a fasting stomach then administer a most horrible draught: liq. ext. mas filicis 1½ drachms, oil of turpentine 1 drachm, mucilage 1 drachm, syr. simplex 1½ drachms, tinct. gent. co. 20 minims, aq. menth. pip. ad 1½ oz. One hour after this has been taken give ol. ricini 1½ oz. The large dose of turpentine is less irritating to the kidneys than a small dose, being quickly evacuated. I would suggest that this treatment should not be adopted for a few weeks after any failure of treatment, so as to give time for the growth of a bulk of worm from the head segment which remained behind.

Dr. PHILIP HARPER (N. Devon) also writes: Pure carbon tetrachloride in a dose of 40 to 60 minims (according to body weight) given before any food has been taken for the day and followed fifteen minutes later by 1 oz. of magnesium sulphate will expel the worm. No food should be taken after the carbon tetrachloride for at least two hours, and in any case not until the bowels have been well opened, and the food during the day or two following this treatment should be light and mainly farinaceous. Alcohol is absolutely prohibited. If the bowels are not open within two hours of giving the magnesium sulphate the latter should be repeated. There is in my mind no doubt that carbon tetrachloride, even when its purity is guaranteed by leading pharmaceutical firms, is a dangerous drug. In anaemic and debilitated people (when carbon tetrachloride is given for hookworm) the mortality is far higher than the literature—especially that of mass treatments—would lead one to suppose, and may be about one in two or three thousand cases treated. The patient should therefore be prepared by treatment, if necessary, of any anaemia. She should be well supplied with starchy and sugary foods before treatment, and should not be allowed alcohol or any food which might be likely to put a strain on the liver. After-treatment for four days is important—light diet, laxatives, sugar, and calcium. My experience has led me to abandon carbon tetrachloride for hookworm in favour of safer preparations, but for tapeworm I would always use this drug. Any ascaris infection should first be dealt with if present, as the drug is said to be more toxic in ascaris infection than in its absence. Carbon tetrachloride treatment should not be repeated within two weeks. The toxic action is on the liver, and in the cases seen by me such action is not manifest until some days, usually four, after treatment. The worst cases go on to a fatal termination with acute yellow atrophy. Though the risks are not great it is well to know of them and to prepare so far as possible against them.

Medical Apparatus in 1816

Dr. R. M. B. MACKENNA, Honorary Librarian, the Medical Institution, Liverpool, writes: In reply to Dr. J. N. Collins's inquiry regarding "an apparatus for recovery from suspended animation" (*Journal*, November 12, 1938, p. 1028), there is in this institution a bellows apparatus, manufactured by Simpson and Smith, surgical instrument makers, 55, Strand, London, which is probably the apparatus referred to. It is described on a leaflet enclosed with the instruments as "apparatus for restoring suspended animation," and consists of a bellows, flexible tube, and nozzles for insertion into the nostrils, together with silver tracheal tubes. Respiration was induced by inflating and deflating the lungs by means of the bellows. The date of manufacture of this apparatus cannot be traced, but enclosed in the case containing it is a leaflet published by the Royal Humane Society with instructions as to the treatment recommended by the Society for restoring the apparently drowned. This includes the following: "In order to restore breathing, introduce the pipe of a common bellows (where the apparatus of the Society is not at hand) into one nostril, carefully closing the other and the mouth; at the same time drawing downwards, and pushing gently backwards the upper part of the windpipe to allow a more free admission of air; blow the bellows gently, in order to INFLATE THE LUNGS, till the breast be a little raised: the mouth and nostrils should then be set free, and a moderate pressure made with the hand upon the chest. Repeat this process until life appears." Instructions which include the use of the apparatus in cases of the apparently dead from apoplexy, from intense cold, from hanging, from noxious vapours, lightning, etc., are also contained in the Society's leaflet. The words "where the apparatus of the Society is not available" would seem to indicate that the apparatus in our possession is that approved by the Royal Humane Society.

Familial Malignant Jaundice

"M. W." writes: Within recent years I have encountered in my practice two families in which succeeding children succumbed to malignant jaundice of the newborn. Can anyone suggest any prophylactic treatment which might be given to the mother during pregnancy?

LETTERS, NOTES, ETC.

Anachronism

Mr. W. PHILLIPS, F.R.C.S., writes from Matlock: I have read many strange things in lectures by psychologists; but few more strange than the story of how Prince Bismarck, after waiting a whole day for the result of the Battle of Austerlitz, had a fit of typical hysteria when told that his forces had won the victory (*Journal*, January 21, p. 127). At Austerlitz in 1805 Napoleon defeated the combined Austrians and Russians. As Bismarck was not born until 1815, and did not become Chancellor until 1871, his conduct does seem odd. But I cannot think it was typical hysteria—perhaps he laughed till he cried merely because he was amused.

British Health Insurance and the American Problem

Dr. J. BELL WALKER writes from Ayr: The leader with the above heading in the *Journal* of January 14 (p. 72), on the book by Douglass W. Orr and Jean Walker Orr, *Health Insurance with Medical Care: the British Experience*, is one which, I am sure, many will have been glad to read. But just as the leader writer says it would have been better to avoid the phrase "average general practitioner," I say to him that it would have been better to avoid the phrase "English system of national health insurance in Great Britain."

Disclaimer

Mr. MICHAEL OLDFIELD (Leeds) writes: In an article which appeared in a northern daily paper reference is made to me in connexion with an operation performed by me in the capacity of an honorary assistant surgeon at the General Infirmary at Leeds. I was greatly distressed on reading the article, which was written without my knowledge or consent.